State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JON S. CORZINE
Governor

LISA P. JACKSON
Commissioner

David Hird
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1300 Eye St, Northwest
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Washington DC 20005

MAY 2 5 2006

RE: Industrial Establishment: Arsynco
Location: 13th Street, Carlstadt Borough, Bergen County
Block: 91 Lot: 1
Transaction: Cessation of Operations
Remedial Action Workplan Dated: December 31, 2003
ISRA Case #E93024

Dear Mr. Hird:

The New Jersey Department of Environmental Protection ("NJDEP") has completed its review of the proposed Remedial Action Workplan. Please be advised that the Remedial Action Workplan cannot be fully approved at this time because further delineation of the ground water is required. However, it is approved as an Interim Remedial Measure pursuant to the authority vested in the Commissioner of the NJDEP by the Industrial Site Recovery Act (ISRA) and delegated to the Assistant Director of the Responsible Party Remediation Element pursuant to N.J.S.A. 13:1B-4. Please refer to the requirements noted below.

The Interim Remedial Measure shall not limit, restrict, or prohibit NJDEP from directing on-site or off-site cleanup, if deemed necessary by NJDEP, under any other statute, rule, or regulation.

Please be advised that this approval does not represent a full Remedial Action Workplan Approval and, therefore, the Interim Remedial Measure does not fully satisfy the requirements of N.J.A.C. 7:26B-1.10(c)2. Also be advised that "the owner or operator of an industrial establishment shall not sell or otherwise transfer the industrial establishment until ... a Remedial Action Workplan has been approved by the Department..." shall remain in effect until the NJDEP has issued a full Remedial Action Workplan Approval or a No Further Action letter or has entered into a Remediation Agreement with the Department. By issuing this Interim Remedial Measure, NJDEP continues to reserve its right to pursue any penalties allowable under the law for violations of the ISRA statute or regulations associated with this transaction.

I AREAS OF CONCERN REQUIRING FURTHER ACTION

During the review of the December 2003 Remedial Action Workplan, it became evident that there were a number of areas of concern that were initially identified at the site that did not require further action and had not received no further action previously. There were also several that required additional information to verify that no further action was required for a particular area of concern. James Clabby, JMC Environmental, provided the case manager clarification for these areas via email on July 7, 2005. Based on the review of the NJDEP's files and the information provided, no further action is required for the following areas of concern.

A. Area I

Non-Contact Cooling Water Pond

B. Area II

Former AGST Farm Location

C. Area III

Former Building 5 Septic Tank

D. Area IV

Building 1 – Possible Former Aboveground Storage Tanks
Building 2
Building 8B – Aboveground Storage Tank
Building 8 – Spill

E. Area V

Caustic Soda Spill
Solid Material Spill

F. Area VII

Shed
Leaking Drum

G. Area IX

Wastewater Treatment Sludge
Spill – Sulfuric Acid and Caustic
Leaking Drum
Drum Overflow – 3,3,5-trimethylcyclohexanol
Reactor Vessel
Miscellaneous Spills
Compactor and Brine Cooling Areas
Brine Compressor Shed
Leaking Fuel Oil Drum
Aboveground Storage Tank – Mono Isopropanol Amine
Storage Tanks
Excavation Ditch
Tank Wagon Transfer Pump

II SOIL REQUIREMENTS

Over the course of the investigation the areas of concern have been consolidated into ten areas due to proximity and contaminants of concern. These ten areas have been further divided into two tracts. Tract 1 is approximately 9.5 acres and encompasses areas I to IX, which are related to operational areas of the site. Tract 2 is approximately 2.8 acres and is also identified as area X. This is the portion of the site that is predominantly tidal wetlands and has had minimal impact from the operational areas of the site. Ground water is addressed as Area XI.

Area I	Parking Lot, Office Buildings and Pond
Area II	Northwest Portion of the Site
Area III	Northeast Portion of the Site
Area IV	Plant Production Area
Area V	Building 19 and Northeast Tank Farm
Area VI	Former Pond Area
Area VII	Primary Tank Area
Area VIII	Southern Portion of the Site
Area IX	PCB and Site Fill Investigation
Area X	Tract 2 (Eastern Side of the Site)
Area XI	Ground Water

The workplan also included a response to the NJDEP letters dated November 7, 2002 and February 4, 2003.

A. RESPONSE TO NJDEP LETTERS DATED NOVEMBER 7, 2002 and FEBRUARY 7, 2003

1. AREA I - PARKING LOT, OFFICE BUILDINGS AND POND

a. Discharge point of the floor drain

Soil sample (B2-FD) was collected from the first 6-inches of soil immediately below (1.5-2.0' below grade) the drain discharge point and was analyzed for PP+40 and TPH. The results indicate the high levels of xylenes (219 ppm), lead (661 ppm) and PCBs (31 ppm). To highlight the key issues:

- Xylenes were delineated at the same depth at samples VIII-3, VII-18, IV-7 and I-2
- Lead was ascribed to historic fill
- PCBs are widespread at the site

Arsynco states that the xylenes will be addressed by expanding the proposed volatile organic compound (VOC) air sparging treatment.

The proposal is acceptable. Lead and PCBs shall be addressed under site-wide deed notice and cap.

b. Non-Contact Cooling Water Pond Closure

Sediments at the base of the former pond were sampled for PP+40 prior to pond closure, and no contamination was identified. No further action (NFA) is proposed.

The proposal is acceptable.

2. AREA II -NORTHWEST PORTION OF SITE

a. RCRA Storage Area

Elevated levels of PAHs, mercury and nickel were detected in soil sample II-7, at the downgradient edge of the asphalt. PAHs found in the area were previously ascribed to the presence of historic fill material. However, Figure 3 indicates that sample II-7 is approximately 20 feet away from the storage area. Arsynco clarified that the paved area was intact and in good condition and that the area was always paved. Also, the paved area was sloped in the direction of sample II-7 for storm water run off. Sample II-7 was collected at the depositional area of the run-off.

The proposal to include this area as part of the site wide engineering and institutional controls is acceptable.

b. PP-12 Sample Location

PP-12 Sample Location indicated benzene and toluene at 24 ppm and 1300 ppm respectively and the contamination extends to the groundwater table. The delineation of benzene and toluene is complete. Arsynco will include this area within the proposed VOCs air sparging treatment system.

The proposal is conditionally acceptable. Arsynco shall verify that the delineation samples were collected at the same depth (as the highest contamination of VOCs). The sample locations and depths shall be provided on a map. Arsynco shall be advised that if the concentrations do not decrease as a result of the air sparging, a soil investigation will be required.

3. AREA III – NORTHEAST PORTION OF THE SITE

a. Area III – Former Drum Cleaning Station/Brick Pad

Soil sample III-12 contained elevated levels of benzo(a)pyrene (0.96 ppm), benzo(k)fluoranthene (1.8 ppm), arsenic (25.7 ppm), PCBs (3.8 ppm) and TPH (14,000 ppm) and VOCs (BTEX). Elevated levels of VOCs (BTEX and Chlorinated VOCs) and TPHCs were identified in samples PP-9, III-8 and III-12.

Arsenic will be addressed by a deed and cap as historic fill material. PCB remediation is addressed separately in RAW section.

Previous sampling conducted in this area identified the following, in addition to the PCBs:

Elevated levels of VOCs in soil samples PP-9, III-8 and III-12: benzene (up to 19 ppm in sample III-12), xylenes (up to 120 ppm in sample PP-9), chlorobenzene (high of 45 ppm in sample III-8) and chloroform (high of 250 ppm in sample III-12).

Soil sample III-12 also contained TPHC at a concentration of 14,000 ppm and an elevated level of arsenic (25.7 ppm). Arsynco stated that only lateral delineation of VOCs and TPHC was performed. The volatiles and TPHCs will be included in the air sparging area.

Sample PP-9 also contained an elevated level of nickel (570 ppm).

Elevated levels of benzene and chlorobenzene have been detected in shallow well MW-8S in this area. Deep well MW-8D has also contained elevated levels of benzene, toluene, chlorobenzene and chloroform. Since groundwater has been impacted in this area, Arsynco proposes to include the area of the Former Drum Cleaning Station and soil samples PP-9, III-8 and III-12 within the VOC air sparging treatment system.
The proposal is conditionally acceptable at this time.

- Arsynco shall include sample location PP-9 in the site wide deed notice for nickel.
- Arsynco shall clarify the statement " only lateral delineation of VOCs and TPHC was performed" because fig 4. indicates no lateral sampling was performed to the south (towards Bldg.1) of the contaminated sample III-12.
- In addition, no vertical delineation for the BTEX and chlorinated VOCs was indicated. Therefore, if after active remediation of sources of VOs in soil and groundwater, groundwater VOC standards are still being exceeded, then additional soil sampling in soils of this area shall be conducted.
- The post-remedial verification soil samples shall be collected from within the saturated zone soils at a depth below the contaminated locations.

b. Area III - Former Building 5 Septic Tank

One soil sample (B5ST-1) was collected from the soils at the base of the excavation (7-7.5 feet) in this area following removal of the septic tank. As noted in the June 1997 RIR, the tank consisted of a significantly deteriorated steel vessel with numerous holes throughout the tank, and the tank was so degraded that it was removed in pieces. The tank was virtually empty and contained only a small amount of groundwater. The water in the tank drained into the excavation as the tank was removed.

The soil sample B5ST-1 was analyzed for VO+10 and BN+15, and no elevated levels of contaminants were identified. In addition, shallow well MW-21 S was installed in this area, and no contaminants have been identified at elevated levels in this well. Therefore, no further action is required for this area.

c. Area III – Recent Off-site Soil Sampling

During the installation of off-site deep well MW-29D, a series of soil samples were collected from the borehole. This well was also located in the area where Henkel claimed that Arsynco had previously stored drums, and the area where Henkel suggested that the contamination present in their well MW- 17 had originated. The primary contaminants present in Henkel well MW- 17 consist of 1,2,4-trichlorobenzene (1,2,4-TCB), and 1,2-, 1,3- and 1,4-dichlorobenzene (DBC isomers) at levels indicative of DNAPL material in that well. Concentrations of BTEX compounds have also historically been present in Henkel well MW-17 at total concentrations generally in the range of 3,000 to 5,000 ppb.

A total of seven soil samples were obtained from the MW-29D. The laboratory results indicate, that only a low level (less than 0.2 ppm) of a phthalate was detected. These results and the results of the groundwater model prepared by Arsynco (see Appendix D), indicate that the source of contamination in Henkel well MW- 17 is not associated with the Arsynco site. Therefore no further action is proposed.

The proposal for no further action is acceptable. There are no soil contaminants above the residential direct compact cleanup criteria. The ground water in this area (MW29) is not impacted and the ground water contamination at Henkel MW-17 appears to originate on the Henkel site (see the ground water comments below).

4. AREA IV - PLANT PRODUCTION AREA

Area IV is the central portion of the site. This area includes most of the manufacturing buildings Buildings 1, 3, 4, 5, 6, 7, 8, 9, 12 and 14, as well as the Effluent Treatment Basin (ETB) and nearly all of the facility's subsurface process drainage lines, storage areas and a transformer bank. VOC contamination extends below the water table throughout a large part of Area IV. Areas of BN and metals contamination were identified, primarily in the fill material below former site structures.

Arsynco proposed to treat VOC levels within the shallow soils via an active air sparging system. Arsynco proposes to address the BN and metal contamination via a Deed Notice and engineering controls.

The proposals are conditionally acceptable. The wastewater treatment basin was considered an obvious source. Therefore, the NJDEP's previous recommendation, "If *after active remediation of sources* of VOs (BTEX and/or chlorinated VOCs) in soil and groundwater, groundwater VO standards are still being exceeded, then additional soil sampling and delineation of the sources of VOs in soil will be conducted" still applies.

In addition, Figure 5 erroneously lists trichloroethene (TCE) present in soil sample IV-10 at a concentration of 27 ppm. The contaminant reference in sample IV-10 should have been 1,1,1-Trichloroethane (TCA) at 27 ppm. Future figures shall be corrected to reflect the proper contaminant and level.

The lead concentration identified in sample IV-10 (27,000 ppm) exceeds the historic fill maximum concentration of 10,700 ppm. Therefore, prior to the installation of the proposed engineering/institutional controls, Arsynco shall complete the vertical and horizontal delineation of to the property boundary.

5. AOC IV- Building Floor Slab and Chip Sampling- PCBs and Dioxin Issue

NJDEP conducted a dioxin sampling on the site in 1985. Fifteen soil samples were collected by NJDEP at that time from various locations throughout the site, and no dioxins were detected at any concentrations.

In a letter dated November 7, 2002 the NJDEP noted that the area of Building 3 may not have been sampled by NJDEP during the 1985 program. Also this Building was a potential concern for PCDDs/PCDFs because heat transfer oil containing PCBs was heated in this building.

Arsynco acknowledges that PCDDs/PCDFs can be formed when combustion occurs in the presence of a chlorine source but noted that there are many potential sources of dioxins that may be found in soils, including depositions from many type of air emission sources i.e., "background" levels of these contaminants.

Arsynco collected three (3) soil samples from the 0-6" increment of soil/fill material in the area of Building 3. Soil sample B3-1(DI) was obtained from the first 6-inches of soil where the former boiler room and the base of the heat transfer system was reported to have been located. Samples B3-2(DI) and B3-3(DI) were collected from the first 6-inches of soil immediately below the floor slab of Building 3. All three (3) samples were analyzed for dioxins and furans.

Only octachlorodibenzodioxin (OCDD) was detected at 338 parts per trillion (ppt) and 2050 ppt in samples B3-1(DD and B3-3(DI), respectively. These concentrations translate to 0.000338 ppm and 0.002050 ppm in soil.

OCDD is the most common and the least toxic dioxin congener, having a 2,3,7,8-TCDD Toxic Equivalency Factor (TEF) of 0.001. Therefore, since OCDD was the only congener detected in either sample, the Toxic Equivalency Quotient (TEQ) for samples B3-1(DI) and B3-3(DI) are 0.338 ppt and 2.05 ppt, respectively. The USEPA has utilized a 1 ppb TEQ (1,000 ppt) cleanup level for dioxin in residential soil and a range of 5 ppb to 20 ppb TEQ (5,000 ppt to 20,000 ppt) for industrial soils at Superfund/RCRAsites (OSWER Directive 9200.4-26, *Memorandum Subject: Approach for Addressing Dioxin in Soil at CERCLA and RCRA Sites,* April 13, 1998). This USEPA document states that these levels selected by USEPA are protective of human health and the environment.

Please note that the lab results for sample B3-2(DI), also collected from below the Building 3 floor slab, listed two PCDD congeners at *estimated* values of 1860 ppt and 1340 ppt, respectively because of QA/QC issues. Based on the TEF of 0.01 for both 1,2,3,4,6,7,8-HpCDF and 1,2,3,4,7,8,9-HpCDF (0.01), the sum of the TEQs for sample B3-2(DI) was reported at 32.0 ppt (18.60 plus 13.40). These concentrations are also below the soil cleanup criteria noted by USEPA, as discussed above.

Samples B3-2(DI) and B3-3(DI) were obtained from within the ash and cinder historic fill material below the 6-inch thick concrete floor slab of Building 3. Based on their physical properties, PCDDs deposited to soil will strongly adsorb to particulates and organic matter and will generally not migrate in soil (or through concrete). As a result, the presence of these low level compounds in the ash fill material *below* the Building 3 floor slab strongly suggests that they are related to historic fill material at the site and are not a result of former site operations.

Based on the recent data obtained, as well as the historic data collected by NJDEP in 1985, no further action is proposed with respect to PCDD/PCDF sampling at the Arsynco site. Arsynco will properly dispose of the Building 3/9 slab and the Building 6 slab off-site.

The proposal is acceptable.

6. AREA V - BUILDING 19 AND NORTHEAST TANK FARM

This area of the site contained Building 19, a diked aboveground tank farm and an area to the east of the tank farm which had historically been used for various amounts of material and drum staging.

The highest levels of ethylbenzene and xylenes were identified in sample DJS-009, at 2800 ppm and 18,000 ppm respectively. Arsynco stated that previous site data has demonstrated that contaminant levels decrease substantially with depth in the meadow mat.

Additional soil sampling was required by NJDEP to delineate the extent of BTEX compounds.

In December 2002, a single soil boring (V-27) was installed in the area of former soil samples DJS-009 and ARSD-33. Soil boring V-27 was located approximately 5-6 feet to the north of former sample ARSD-33 and approximately 1-2 feet north of the apparent location of former sample DJS-009.

Sample V-27A was collected from the spilt spoons (via VOC syringe and methanol preservation method) at a depth of 1.0-1.5' below surface grade. This increment also corresponded to the highest PID reading obtained in the boring.

An additional sample (V-27B) was collected from a depth of 5.0-5.5' in order to document soil condition below the former ARSD-33 and DJS-009 locations. Sample V-27B was collected from a depth corresponding to the native meadow mat layer in this area.

Both of the additional soil samples (V-27A and V-27B) were submitted to the laboratory and analyzed for BTEX. The results demonstrate that no elevated concentrations of BTEX were detected in either of the delineation samples, completing the delineation of soil in this area.

Please note that an additional shallow well (MW-3 IS) was also installed at this location in December 2002. Benzene (10.1 ppb) was the only VOC identified above GWQS in this well.

The proposal to include this area as part of the VOC remediation is acceptable. Arsynco will continue to monitor VOC concentrations in the ground water in Area V as part of the proposed active treatment for VOCs in the shallow fill soil and shallow Ground water at the site. See the Ground Water Section below for further comments and requirements.

7. AREA VIII - SOUTHERN PORTION OF SITE

A diked 12,000-gallon toluene AST (tank 73) was located in the western portion of Area VIII, adjacent to Building 2. The former RCRA storage area was also located in Area VIII, to the south of Building 18 and adjacent to the gravel parking lot (Area 1). Some parts of this area were determined to contain industrial and process-type waste materials and indicates the most significant concentrations of PCBs on the site. Elevated levels of VOCs, BNs, TPHC, phenols, and metals (including non-fill-related metals) were also detected.

Since a large portion of the area contained PCB concentrations above 500 ppm, Arsynco proposes to excavate the majority of the impacted material in this area and dispose of it off-site. An additional shallow well will also be installed in the area of former sample PP-3. The proposed VOC treatment system will be expanded into this area if required based on the data from the proposed well point.

The proposal is conditionally acceptable.

Post excavation sampling shall be performed for all the parameters of concern for the area(s) according to section 6.4 of the TRSR. A map, preferably color coded, shall be submitted to indicate appropriate sampling frequency, depth, parameters and results.

Sampling for the drainage ditch that extends across the southern boundary of Area VIII (although portions of the drainage ditch may be off-site) shall be performed according to the TRSR. The results and the associated map shall be included in the narrative of this area and the BEE report.

8. Area IX: PCBs across the entire site in both Tract I *and* Tract II

The characterization of PCBs across the entire property (Tract I and Tract 2) was addressed through implementation of a site-wide grid sampling system. Soil borings and test pits were installed and used to document the types and extents of fill material across the site.

However, the fill material within the southeast area of Tract I (Area VIII) also contained industrial and process-type waste materials (still bottoms, etc.). Based on a review of aerial photographs it was determined that the fill was placed in this area of the property in the 1950s and 1960s, with the most significant filling operations occurring between 1960 and 1968 (prior to Arsynco).

Some fill material is also present above the native meadow mat layer on Tract 2. The lateral extent of fill material on the site is illustrated on Figure 26.

A total of 34 grids (grids G-1 through G-34), each measuring 100 feet by 100 feet, were established on Tract 1. Additionally 12 grids were established on Tract 2 of the property (grids T2-GI through T2-G12). Samples were collected from both surface and subsurface locations in all grids. All areas of the property were sampled, including areas below the floor slabs of some site buildings. A total of 205 soil samples were previously analyzed for PCBs.

The sample results indicated exceedance of PCBs in majority of the grids established on the property as follows:

- High levels of PCBs within the top 2-feet of fill material across the entire site (Figure 12).
- High levels of PCBs within the majority of the 2-4 foot of fill material across the site (Figure 13).
- High levels of PCBs were at a depth of 4-feet only in the area where process was located, in the southeast part of Tract 1, and within the contaminated sediment layer located at the base of the former pond in Area VI (Figure 14).
- PCBs of 2 – 5 ppm was in native soils (i.e., meadow mat below below fill material) where process was located (Figure 15).

Arsynco stated that the extensive site sampling and characterization activities have not documented any correlation between PCB levels and other contaminant types (e.g. - petroleum solvents).

PCBs within Tract 2 were generally at levels below 31 ppm, with the exception of sample VI- 16. Excavation and off-site disposal of the "hot spot" (the area of sample VI-16) is proposed. No elevated levels of PCBs were detected in native soils below 2.5 feet across Tract 2.

In general, various PCB isomers were also found at various concentrations and depths within the fill material in areas away from historic production and storage areas (e.g. - western part of property and east edge of Tract 2, along 16th Street) and areas below building floor slabs. However, areas of the site that contain the most significant concentrations of PCBs are clearly related to historic site operations and the burial of process wastes prior to 1969.

Since it is difficult to differentiate if some PCBs are fill related and not from the historic site operations, Arsynco shall address the PCBs issue separately from the historic fill material.

9. AREA XII- BASELINE ECOLOGICAL EVALUATIONS:

The NJDEP also completed the review of the March 12, 2004 document titled "Response to NJDEP Comments on Arsynco BEE." Based on that review, the NJDEP has the following comments.

I.A. Page 6 (2.2.2 Soils), Table 11, 15 and F-1: The response is conditionally acceptable. In addition to the proposed hexavalent chromium soil analysis, the proposed samples shall also be analyzed for total chromium to confirm prior total chromium results and to correlate total chromium results with potential hexavalent chromium levels.

Note that the NJDEP "in-house" phytotoxicity based benchmark of 200 ppm trivalent chromium (total chromium result assuming no hexavalent chromium) is used for upland soil screening puposes. Arsynco may use this trivalent chromium benchmark for upland soils versus the 1 ppm Oak Ridge National Laboratories (ORNL) benchmark for hazard quotient (HQ) calculations, etc.

I.B. Page 17 (5.1) Soil): It is stated that a limited number of VOCs and metals in monitoring wells slightly exceeded the applicable aquatic chronic surface water quality standards (SWQS) in wells MW-9s and MW-13s(R).

The statement is confusing since there are no aquatic SWQS for benzene. It is assumed that the intent was to indicate that the human health standards were only slightly exceeded. In future documents addressing ecologiacl risk, references to human health benchmarks shall be excluded. The National Oceanographice and Atmosheric Administration (NOAA) Screening Quick Reference Tables (SquiRTs) may be used as a source of additional sediment and surface water benchmark.

The response is otherwise acceptable.

I.C. Page 23 (6.2.9 Tract 2 Soil), Page 24 (6.3 Results of Sediment – Tract 2), Page 25 (2nd Paragraph): The response is acceptable.

I.D. Page 27 (Section 7) bullet item, Appennix B (Surface Water sampling results), Table F-22): The response is acceptable. It is confirmed that the aquatic, acute, marine SWQS for lead is 8.1ppb.

I.E. Page 30 (Section 8.0 Conclusions): The response is acceptable.

I.F. Table 17: The response is acceptable.

I.G. Appendix E (Surface Water Screening Benchmarks): The response is acceptable.

I.H. Appendix E (Page 3 and 4: Phytotoxicity and Wildlife Screening Benchmarks): The response is acceptable. Please note that the additional ORNL document was recommended because the ORNL Preliminary Remediation Goals (PRG) document summarizes prior ORNL document and provide additional "user friendly" features (converts wildlife dose benchmarks to soil benchmarks, etc.) not because updated benchmarks were required.

Arsynco shall continue to address all ecological related issues, site-wide and/or AOC specific, in terms of ecological concerns in a stand-alone ecological document.

B. REMEDIAL ACTION WORKPLAN (RAW)

1. Summary

Based on the contamination present at the site, Arsynco is proposing a site-wide remedial strategy instead of an area by area remediation. The following is a summary of the contamination present at the site (both Tracts 1 and 2).

- PCB contamination of the soil and sediment at levels greater than 50 ppm on Tract 1. This contamination is subject to the USEPA Toxic Substance Control Act (TSCA). Arsynco submitted a Risk-Based Remediation Request to USEPA on October 8, 1998 with modifications submitted on October 11, 1999 and October 4, 2004. USEPA is preparing an approval for public comment.
- The concentrations of semivolatiles/PAHs, some metals and more widespread concentrations of PCBs are located throughout nearly all of Tract I.
- The PCBs are present at levels of 0.49 to 50 ppm throughout Tract 1.
- The levels of BNs, metals, VOCs, phenols and TPHC identified within the process-type waste materials in the southeast part of Tract I (Please note that this process type material also contains PCBs >500 ppm and is the subject of the PCB remedial proposal currently being reviewed by USEPA);
- The VOC contamination (primarily BTEX) present within in the shallow fill material on Tract 1;
- The VOC contamination (primarily BTEX) identified in the shallow groundwater within the fill material overburden on Tract 1;
- The contaminated sediment layer within the old pond (Area VI) located on the eastern side of Tract 1 contains all of the above contamination and Chlorinated VOCs;
- The Chlorinated VOCs contamination is in the deeper groundwater below the meadow mat layer at the site;
- The metals, VOC (> 1000 ppm) and PCB contamination associated with the *sediments* present on Tract 2.

It should be noted that the contamination at the site is attributed to both historic fill and operation-related contamination. Some of the contaminant constituents are the same for both, fill and operation related contamination. Therefore, the remedial action proposed for Tract 1is basically to remove or treat areas of significant contamination. Residual contamination, both fill and operation related, will remain in place with appropriate engineering and institutional controls. Again it should be noted that this remediation excludes PCB contamination greater than 50 ppm, which will be addressed by the USEPA.

2. Historic Fill Material

Arsynco proposes to place institutional and engineering controls on the site to address the historic fill contamination. Much of Tract 1 has historic fill related contamination. The fill was utilized throughout the site to raise the marshy areas to suitable grade for the industrial use of the site. Tract 1 also contains operational related contamination. The institutional and engineering controls will also address any residual process related contamination on Tract 1, excluding the TSCA regulated areas.

Following active remediation of the operational related contamination, described below, Arsynco will install an asphalt cap across the entire Tract I, with the exception of the TSCA remediation areas and the existing site office building (Building 16). Please refer to Figure 27 for an illustration of the approximate boundaries of the areas of the

site to be paved. In addition, a six-foot chain link fencing will be placed/maintained around the perimeter of the Tract I parcel.

Arsynco also proposes an institutional control for the limited area of historic fill material on Tract 2 where lead was identified below NRDCSCC. This area encompasses only the location of sample TR2-25 along 16th Street. However, the Deed Notice will also cover the majority of sediments on Tract 2.

Contaminant	Highest Concentration (ppm)	Sample Location	Depth Below Grade (Feet)
Tract I			
*Antimony**	197	V111- 12	0-0.5
	364	VIII-22	3.0-3.5
Arsenic	155	I-IA	0-0.5
Beryllium	20.2	VI-6	.5-1.0
Cadmium	46.7	VIII-12	0-0.5
Copper *	1300	PP4	0-0.5
Lead	27,000	IV-10	.5-1.0
*Mercury**	31.9	11-7	.75-1.25
*Nickel**	3,500	PP-4	0-0.5
Thallium*	8.2	IV-15	0-0.5
Zinc	3,680	VI-6	.5-1.0
Benzo(a)anthracene	22	IV-6	1.0-1.5
Benzo(a)pyrene	14	IV-6	1.0-1.5
Benzo(b)fluoranthene	17	IV-6	1.0-1.5
Benzo(k)fluoranthene	6.6	IV-6	1.0-1.5
Indeno(1,2,3-cd)pyrene	9	IV-6	1.0-1.5
*Chrysene**	20	IV-6	1.0-1.5
Dibenz(a,h)anthracene	3.1	IV-6	1.0-1.5
*Di-n-butylphthalate**	510	VII-8	1.0-1.5
*2,6-Dinitrotoluene**	3.9	111-4	0-0.5
*2,4-Dinitrotoluene**	11	111-4	0-0.5
Tract 2			
Lead	443	TR2-25	0-0.5

The contaminants with Asterisk* and PCBs are generally ***not*** Historic Fill related.

The proposal is conditionally acceptable. Arsynco shall note that PCBs and the compounds above that are noted with an Asterisk* are not considered fill related. However, these compounds are present in the fill and it is appropriate to remediate them in the same manner as the historic fill material. Arsynco shall identify these compounds as process related in the institutional control.

3. Tract 1 fill/soils with PCB Levels < 50 pm

PCB contamination is found both in the fill and native soil on Tract 1. Areas where the contaminant level is greater than 50 ppm is being addressed under the USEPA TSCA Risk Based Approval. Arsynco estimates that there is 55,000 tons of soil that has PCB contamination at levels between 0.49 ppm and 50 ppm. Since the area where this contamination is present overlaps the areas of historic fill, Arsynco proposes to include this contamination in the institutional and engineering controls as depicted above in the Historic Fill section.

The proposal is acceptable. Arsynco is aware that the PCB contamination is most likely from an operational discharge. Although this does not alter the remedial approach the institutional control shall clearly state that this material is operational related and not fill related.

4. Contamination in the Area of Process-Type Fill Materials in Southeast Part of Tract 1

There are elevated levels of BNs, metals, VOCs, phenols and TPHC identified in southeast portion of the site where the process-type waste materials were found. This area also includes PCBs greater than 500 ppm as well. In accordance with the TSCA Risk Based Remediation, this area will be excavated as part of the PCB remedy. Arsynco will collect post-remediation samples to confirm that the area has been remediated. Once PCB levels are below 50 ppm, the excavation will be compete and any residual contamination that remains above the RDCSCC will be included as part of the institutional and engineering controls.

This is conditionally acceptable. Arsynco shall analyze the post-excavation samples for BNs, VOCs, metals, phenols and PHCs as well as PCBs. Sampling for all parameters allows Arsynco to document what contaminants are present at the site in the institutional control.

5. VOC Contamination in the Shallow Soil/Fill Material and Shallow Ground Water

Generally, elevated levels of BTEX compounds and chlorinated volatiles, in shallow soil/fill material are evident within large areas (contiguous and/or isolated) on site.

The areas of VOC contamination identified are related to historic site operations. Arsynco states that the most significant levels of VOCs in ground water are located within the main area of this plume. Based on the sampling data obtained, it is estimated that approximately 78,000 pounds of VOCs are present in the fill material overburden within the largest area of the plume, where total VOCs were identified at levels >1,000 ppm, as shown on Figure 16A. This amount does not include the high levels of chlorinated VOCs contained within the former pond in Area VI. This amount also does not include the VOCs associated with the process-type waste materials in the southeast part of Tract 1, where PCB levels >500 ppm are also indicated, where a PCB remedial program is proposed to the USEPA.

Please note that the area of the former pond contains VOC in the sediment layer. However, Arsynco states that it is not directly connected with the remainder of the VOCs shown in the area of Building 8, Building 19 and Building 6. As such, the remedial proposal associated with the pond area is provided separately.

Arsynco is proposing to install and operate the air sparging system in an expanding (not mobile) fashion. The conceptual remedial action plan for this area is to enhance biological activity by the installation of a vertical air sparging system and the subsequent recovery of VOC emissions by the installation of a horizontal vapor recovery system.

The remediation of the VOCs throughout this area will involve two separate "phases" as follows:

- The first phase - active treatment of shallow soils/fill and shallow groundwater in the VOC impacted areas using air sparging system.

- The second phase- monitored natural attenuation processes under a classification exemption area (CEA).

The primary objective is to introduce additional oxygen via the sparge air to increase in-situ microbial respiration and enhance the biodegradation of VOCs in fill material and shallow groundwater. Once the main source areas are treated, contaminant levels in soil have been reduced and a significant improvement in ground water quality is documented (determined by establishing a decreasing trend), the first phase of active treatment will be considered complete.

Arsynco states" as long as residual VOC contaminants in the soils are not adversely impacting groundwater, some elevated levels of VOCs can remain in site soils as part of the deed notice". Confirmatory soil sampling at 0-6 inch increment of soil above the water table will be conducted for BTEX for the purposes of a Deed Notice

The proposal is conditionally acceptable. The area for air-sparging include soils areas with > 1000 ppm of BTEX only. Arsynco shall address or clarify the remediation of soil areas with < 1000 ppm of BTEX.

Although it appears that the VOC contamination is not impacting the remaining building on-site, Arsynco shall address any potential indoor air contamination from the remaining VOCs in soils and ground water should buildings be constructed in the future. If applicable, generation of site specific values from Johnson and Ettinger Model (J&E model used by EPA) shall be required for appropriate future use scenario. If required, the most recent updated J&E model

(December 2000, on the Internet at http://www.epa.gov/oerrpage/ superfund/programs/risk/ airmodel/johnson_ettinger.htm) shall be used.

To address a source or sources of Chlorinated VOCs across the site, isopleth maps shall be provided for chlorinated VOCs for soils, shallow ground water and deep ground water.

See the Ground Water section below for specific requirements related to the treatment of the shallow ground water via air sparging.

6. Contaminated Material Within the Former Pond (AOC IV)

Located on the eastern part of Tract 1, the pond was formerly used to accept drainage and discharges from the facility prior to the early 1970s. Operation of the pond ceased and the pond was filled in between 1970 and 1973. The top 4 feet is considered historic fill and below that is a layer of contaminated material (including pond sediments). Arsynco estimates that the contaminated material layer is approximately 3.5 feet thick throughout the entire pond. The material contains elevated levels of VOCs, metals, TPHCs, phenols and PCBs.

Arsynco states that the pond liner was constructed with heavy bentonite clay of 4 feet thickness and the sample results demonstrate that the clay liner has effectively contained the contaminated materials and that the contaminated layer did not affect the ground water. Therefore, it is proposed that the contaminated layer would remain in place with institutional and engineering controls, which includes periodic ground water monitoring.

Extremely high levels of numerous contamination (for example, TPHC of 42,000 ppm, Copper of 24,000 ppm etc.) total VOCs, including chlorinated VOCs in soils over 1000 ppm (for example, TCE of 2,850 ppm), and PCBs levels ranging from 100 ppm to 970 ppm (sample VI-TP-3A) were found within this former pond area.

Due to the elevated levels of PCBs in the contaminated pond material, Arsynco has proposed to USEPA a Risk-Based Remedial Action that would call for the PCB material to remain in the pond with appropriate institutional and engineering controls. This proposal is currently under review by USEPA.

The remaining contaminants for the above list are co-mingled in the material that is contaminated by PCBs. Based on the sample data collected from the site, the clay liner appears to be intact and the soil and ground water outside of the liner has not been impacted by the contamination detected within the pond. Therefore, Arsynco proposes that all of the contaminated material remain in the pond. The pond would subsequently be capped and fenced in accordance with the USEPA requirements for the approval of the PCB remediation along with long-term ground water monitoring.

The proposal is conditionally acceptable. It is the NJDEP's understanding that the USEPA intends to conditionally approve Arsynco's Risk Based Remediation for PCB contamination greater than 50 ppm. Since the other contamination is co-mingled with the PCB contamination, and there is no impact to the soil or ground water beneath the pond by these contaminants, the NJDEP will allow for the contamination to remain in place with approved institutional and engineering controls as outlined in the USEPA approval. Arsynco shall be advised that should for any reason USEPA not approve the Risk Based remediation plan for the PCB contamination, they shall submit an active remedial action for the contaminated material within the pond. Arsynco shall analyze ground water samples for all contaminants within the pond as part of the long term monitoring that is proposed in the Risk-Based Remediation for PCBs,

7. Area of Process Related Contamination and PCBs > 500 ppm

Elevated levels of BNs, metals, VOCs, phenols and TPHC were identified within the limited area where process-type waste materials were identified in the southeast part of Tract 1. The extent of process-type waste in this entire area is depicted on Figure 26. This process-type waste material also contains PCBs >500 ppm. As a result, the

material is part of the PCB remedial proposal, which is currently being reviewed by USEPA. The soils of this area will be excavated and disposed off-site as part of the proposed PCB remedial program.

Following the removal of this material, post-excavation soil sampling will be conducted in accordance with N.J.A.C. 7:26E-6.4. Confirmatory samples will be analyzed for the targeted parameters of concern throughout this area, including VO+10, BN +15, priority pollutant metals, TPHC and phenols and PCBs.

The proposal is conditionally acceptable. Both vertical and horizontal delineation shall be clarified for all parameters of concern for this area. It is recommended that the maps be color coded to indicate the zone of regulatory compliance or non-compliance for each parameter. Please note that the excavation shall extend laterally and vertically beyond the highly contaminated zone to meet the applicable regulatory criterion pursuant to N.J.A.C. 7:26E- 4.1 (b) TRSR.

8. Proposed Remedial Action for Sediments on Tract 2- Hot spot removal

Arsynco proposes to actively remediate the area of sediments on Tract 2 that contain over 1000 ppm of total VOCs, specifically 4187 ppm, (Fig. 11A), at the area of sample VI-16. The area is delineated to the RDCSCC by sampling and contamination gradient. Excavation and off-site disposal is proposed for this hot spot area only. Following the excavation of this limited area, post-excavation samples will be collected in accordance with the TRSR for volatiles only. Once remediation is completed, Arsynco will restore/mitigate the disturbed area of wetlands in this area.

Arsynco states that disturbing the sediments within other areas of Tract 2 via excavation will not only be difficult (due to the swampy nature of this area) but will also create a considerable concern associated with dispersion of contaminants. In addition, the Tract 2 portion, considered a Saline Marsh, continues to receive increased drainage from Berry's Creek and the surrounding areas because it is one of lowest lying areas in the immediate vicinity.

The proposal for limited excavation within Tract 2 is conditionally acceptable. The removal of sediments associated with VI-16 (VOCs) will also remove the highest Tract 2 PCB level of (197 ppm).

Within approximately 50 feet of the proposed excavation limits, sample locations TR2-1, TR2-2, and TR2-3 contain the remaining highest Tract 2 PCB levels (29, 31, and 22 ppm, respectively) and the remaining highest site-related nickel and most of the remaining highest metal concentrations. TR2-3 contains high metals (Ni = 1700 ppm and Cu = 2100 ppm). TR2-4 also contains high metal concentrations including Ni (3800 ppm). TR-5 contains arsenic up to 99 ppm.

The proposed excavation shall be expanded to include the sample location TR2-1 through TR2-5. Please note that with removal of the sediments/soils around these additional locations the average PCB levels throughout the Tract should be reduced to 5.02 ppm. Given the relatively high levels of contamination in this highly industrialized area coupled with the tidal connection with Tract 2, further attempts to distinguish site from off-site contamination would be difficult. Only the maximum antimony concentration (43 ppm) will not be addressed by the expanded excavation. Based on the apparent vertical limitation of contaminants by the underlying peat layer, a 2 to 3 foot excavation depth for the entire excavation area should be sufficient.

In addition to the post-excavation sampling for VOCs, all samples shall also be analyzed for PCBs and metals.

The remediation of the limited area within Tract 2 appears to be motivated by the presence of significant concentrations of contaminants above the human health based criteria. NJDEP is also concerned with the contaminant concentrations and how they relate to ecological risk benchmarks. NJDEP is especially concerned with upper tropic level contaminants (hg, DDT and metabolites, PCBs) that are at, near, or above levels of concern for wildlife in the ambient environment. These persistent, bioaccumulation toxins (PBTs) are to be assessed more rigorously. Remediation of net site contributions is required in an effort to decrease ambient/background concentrations in soil and sediment. By removing the additional soils/sediments in the vicinity of samples TR2-1 through TR2-5 it is thought that a reduction in net contributions will be observed and no further remediation will be necessary to address ecological risk.

To fully assess whether the remediation of the sediments stated above satisfy all NJDEP concerns (human health and ecological), the remedial action report shall compare and present all post-excavation data as well as those concentrations remaining not only to the direct contact criteria but also to ecological risk benchmarks. The report shall also present

justification for the remediation and state how it is protective of ecological receptors.

Lastly, the southern ditch runs on and off-site along the southern property boundary. The ditch is apparently open/exposed to contaminated site fill. Since the remaining portion of the site is to be capped to preclude exposure to fill soils, the ditch cutting through the fill shall be remediated. A plan to culvert or line the ditch shall be proposed. This will prevent erosion and leaching from contaminated fill to the ditch and subsequent contaminant dispersal to Tract 2 and downgradient aquatic receptors.

C. Former Building Foundations

Following the cessation of operations in 1993, Arsynco began to dismantle the equipment and ultimately demolish the buildings, with the exception of the office building, #16 and the guard house. Once all material that could be salvaged and recycled was removed from the site, the buildings were demolished, leaving only the floor slabs. The slabs were sampled in the August 1994 for VO+10, PCB and PPM. The results were reported in the June 1997 Remedial Investigation Report. Elevated levels of PCBs were detected in the floor slabs of building 1, 2, 3/9, 6 and 8 at levels of 3.6 ppm and 18 ppm, 7.4 ppm, 2200 ppm, 14 ppm, and 3.3 ppm, respectively. Chromium was detected in the building 17/18 sample at 1350 ppm and low levels of xylene were detected in the building 6 and 8 samples, with the highest concentration detected at 240 ppm.

With the exception of the building 3/9 slab, all slabs were crushed and left in place. The slabs were crushed to allow access for soil sampling below the building. As noted above in section I.A.5, Arsynco proposes to properly dispose of the building 3/9 slab and the crushed building 6 slab. All other crushed slabs will remain on site and be included in the institutional/engineering controls. The proposal is acceptable.

D. QA/QC Review

Since the results generally indicate high levels of contamination across the site, the SI and RI data are generally accepted as usable, with the exception of the Dioxin data.

The NJDEP Office of Data Quality (ODQ) disagreed with the laboratory's reporting of "non-detect" results for total TCDD for one of the three soil samples. For B3-2(DI), the ODQ reports total TCDD result to be 10.4 ppt. Althouth the results were not ND, they are below the residential action level of 1 ppb. ODQ's determination (attached) was based on "sufficient qualitative criteria were met for compounds to be considered present". Arsynco provided documentation further clarifying the data on September 15, 2005. Final review of the dioxin data has determined that it is acceptable.

III GROUND WATER REQUIREMENTS

A. Response to NJDEP's letter dated February 4, 2003

The NJDEP has the following comments and requirements to the section of the report that responded to the NJDEP's letter dated February 4, 2003. Please note that only those items requiring a response are addressed.

1. Area II – Northwest portion of site

a. RCRA Storage Area:

Access was negotiated with NJ Transit and the proposed wells were installed. Wells MW27S/27D were installed northwest (NW) of on-site MW7S. An additional deep well, MW28D, was installed NW of on-site MW18D. The wells were installed between the railroad tracks and the Arsynco property line. Reportedly, there was insufficient space between the rails and the drainage ditch on the West Side of the tracks. Arsynco conducted a thorough investigation of site geologic and hydrogeologic conditions to further evaluate ground water flow, as well as a review of adjacent off-site properties.

Arsynco states that ground water flow is consistently toward the SE in the NE portion of the site, therefore, contamination in MW7S is coming onto the site.

The new wells, MW27S/27D and MW28D, are generally acceptable, however, they were installed on the same side of the western drainage ditch as the Arsynco site. This may or may not be sufficient to evaluate flow direction, but in any case, the wells are still in relatively close proximity to Arsynco AOCs to definitively prove an off-site source. In addition, the contour maps provided are from March 2002, May 2002 and May 2003, which are all high water periods. Shallow flow is actually toward the west and SW in this area of the site on the March 2002 map. A ground water divide is indicated in the vicinity of MW7S in May 2002, at which time there is a component of flow to the NW. It is possible that shallow flow is influenced by water levels in the western drainage ditch, flowing away from the ditch during high water and toward it at other times. Arsynco shall collect ground water and surface water level measurements quarterly and include shallow and deep contour maps for each quarter in semi-annual progress reports. All on and off-site monitor wells shall be included. If Arsynco wishes to prove that there is an off-site source for the ground water contamination in this area, Arsynco shall continue to pursue the installation of off-site wells farther to the west to evaluate ground water quality away from their AOCs. Even though Arsynco believes shallow water discharges to the ditch, if there is no other source of chlorinated VOs, given the variable flow direction, Arsynco would likely be the source. The depth of the ditch shall also be provided.

b. PP-12 Sample Location:

Benzene was detected in soil sample PP-12 at 24ppm and in well MW19S. Arsynco proposes to expand the VOC treatment system proposed in Section 7 to include the area of PP-12. This response is acceptable.

2. Area III – NE Portion of Site - Drum Cleaning Station:

Two off-site well clusters (MW29S/29D and MW30S/30D) were installed on the Northern Eagle Beverage Company property located north of Arsynco. The new wells were required to delineate contamination in the MW15 and MW8 well clusters respectively, as Henkel/Diamond Shamrock had previously made the case that contamination was migrating onto their site from Arsynco. The new wells were sampled in May 2003 and incorporated into an updated tidal study, which was conducted in June 2003. Arsynco constructed a fate and transport model for the contaminants detected in Henkel well MW17. The contaminants are mainly 1,2,4-Trichlorobenzene (1,2,4-TCB) and the three Dichlorobenzene (DCB) isomers. Arsynco asserts that the model indicates there is/was DNAPL in Henkel MW17 and that this is the source of chlorinated benzene compounds in Arsynco MW8D.

Seven soil samples were collected from the MW29D borehole during installation of that well. The samples were collected here because MW29D is located directly NW of MW8S/8D and between MW15S/15D and Henkel well MW17. It is also reportedly in the exact spot that Henkel claimed Arsynco stored drums. Henkel had previously suggested this area (apparently then Arsynco) was the source of very high concentrations of 1,2,4-TCB, and 1,2-, 1,3-, and 1,4-DCB in their MW17. Samples were collected below the meadow mat at depths ranging from 11.5 – 12 feet to 20.5 – 21 feet and analyzed for BN+15. Results were reportedly ND for the contaminants in question. Arsynco notes that the meadow mat was encountered at all off-site well locations at approximately the same depth it occurs on their site. (It was not clear from the Henkel logs whether the meadow mat was present in this area. As it is, the Henkel wells are apparently screened across it).

At this time, based on the information provided, it does appear that the chlorinated benzene contamination in Henkel MW17 is not emanating from Arsynco. However, as noted above, Arsynco shall continue to collect ground water level measurements quarterly to evaluate flow seasonally.

3. Area V – Building 19 and Northeast Tank Farm

Off-site soil delineation of soil sample DJS-009 was completed on the Northern Eagle Beverage property to the north of Arsynco. A well, MW31S, was installed at this location in December 2002. The well was sampled for VO+15 in May 2003 and contained only benzene at 10.1ppb. Arsynco will continue to monitor ground water in Area V as part of the proposed active VO treatment in shallow fill and ground water, as discussed in Section 7 of the report. This is acceptable.

4. Area VI - Former Pond Area

Four Shelby Tube samples were collected from the clay composing the pond liner in May 2002. The samples were collected from depths of 9.5 – 11.5 feet and 10.0 – 12.0 feet. The samples were analyzed for various factors, which would effect the permeability of the clay. The results reportedly indicate that the four-foot thick clay liner is an effective containment barrier. Arsynco states that the Shelby Tube data supports the conclusion that ground water has not been impacted by the pond.

NJDEP previously required an additional shallow well at soil sample VI-PD5. Arsynco states the installation of this well was overlooked during this phase of investigation, however, the well will be installed. Arsynco proposes to install the well further west, closer to samples VI-PD5(3) and VI-PD5(4), which contained higher VO concentrations. In addition, the proposed VO treatment system will be expanded into this area if necessary based on the results of the well point.

Based on the information provided, it appears that the clay composing the pond liner is sufficient for containment. Whether the clay is continuous and is uniformly thick is not definitively known. In addition, contamination may be migrating from the pond via overflow and/or surface runoff.

It is not clear whether a permanent well or a temporary well point are proposed at VI-PD5. However, as Arsynco proposes to move the sample location farther west, NJDEP recommends using a cone penetrometer methodology to determine the exact location of a permanent well. As the sampling equipment is billed by the day, rather than the number of samples, samples could be collected from VI-PD5, VI-PD5(3) and VI-PD5(4). The permanent well could then be installed at the most contaminated location. Alternatively, Arsynco shall install a permanent well between VI-PD5 and VI-PD5(3).

Expansion of the treatment system into this area is acceptable.

5. Area VII – Primary Tank Farm Area

The installation of the required shallow well paired with MW6D was overlooked during this phase of investigation. The well will be installed prior to implementation of the VO treatment system. This is acceptable.

6. Area VIII – Southern Portion of Site

Arsynco states that the NJDEP required wells at soil samples VIII-20 and grid G-30. However, as these samples are apparently very near each other, only one well is proposed. The soils in this area also contain PCB concentrations greater than 500ppm, which Arsynco proposed to excavate and dispose off-site. The May 11, 2000 letter also proposed to postpone installation of the one shallow well until the soil was removed. This was approved by NJDEP in their response letter dated May 1, 2001.

Off-site, downgradient wells MW32S/32D were installed approximately 120 feet SE of MW12S/12D. Elevated methylene chloride, benzene and nickel were detected in MW12S in May 2003, while only benzene at 1.1ppb was detected in MW32S. Arsynco states that MW32S is on the opposite side of a drainage ditch that runs along the south side of the site and that shallow ground water discharges to this ditch. Arsynco attributes the contamination in MW12S to the process fill within AOC VIII, particularly in the vicinity of MW13S. A large portion of the fill will be excavated and Arsynco believes the associated ground water contamination will decrease once the source is remediated.

In regard to deep ground water, only arsenic was detected in MW13D in May 2003. Arsenic is reportedly a regional problem. MW12D contained elevated PCE, TCE, and bis (2chloroethyl) ether in double to triple digit parts per billion concentrations. PCE and TCE were detected sporadically historically, but have been detected again in the 2002 and 2003 samples. Bis (2chlorethyl) ether has been detected consistently, however the levels have reportedly been decreasing. Arsynco believes all three compounds are migrating onto the site from the Cosan Chemical property located to the SW, particularly near MW6D.

The proposal to postpone installation of a shallow well in the vicinity of VIII-20/G-30 is acceptable. However, if Arsynco employs any temporary well methods on the site prior to that time, a sample shall be collected at this location to assess the condition of the ground water.

Comment on the remediation of MW12S and MW13S is provided below as general comment on the RAW. In regard to MW32S, Arsynco shall monitor this well pair in conjunction with the quarterly water level monitoring program referenced herein. Arsynco shall also collect surface water elevations from the ditches concurrent with collection of ground water level measurements. Elevations shall be collected from the ditches on the western and southern sides of the site. If appropriate (water is always present) water level measurments shall also be collected from the ditches on Tract II. This is to evaluate seasonal water level fluctuations and to determine whether contaminants are actually discharging to the ditches.

In regard to deep ground water, as stated above, Arsynco shall collect water levels quarterly to determine seasonal fluctuations in flow. Where appropriate, it is recommended that synoptic water levels from adjacent sites (Cosan Chemical) be included in at least one if not more quarterly monitoring events. This is suggested so that a "snapshot" of water levels in the area can be obtained for the same date and time. In addition, variation may occur in measurement collection technique, as well as interpretation of the data if different individuals are involved. Arsynco shall determine the well construction at other sites prior to collecting this data; as well construction may not be comparable.

7. Area IX – Ground Water

a. Wells MW14S and MW15S were sampled for PCBs in May 2003 using low flow purging methodologies. No PCBs were detected in either well. Arsynco states this supports their previous conclusion, which was that previous PCB concentrations were attributable to the presence of sediment in the samples. The NJDEP concurs with this conclusion at this time.

b. Arsynco states that the ground water underlying the site should be reclassified other than II-A. The argument for the shallow unit is that it is not extensive enough to be utilized as a water source. The argument for the deep zone is that the water quality is poor due to recharge from urban runoff.

Based on the procedures outlined in N.J.A.C.7:9C –1.10, it does not appear that Arsynco qualifies to apply for the reclassification of the ground water as a II-B. Reclassification to an III-B can only occur when chloride or TDS exceed the III-B standard (3,000ppm and 5,000ppm respectively) or natural ground water quality otherwise precludes potable use. This is not the case at Arsynco; therefore, the aquifer remains classified as an II-A.

c. Arsynco installed the well cluster required downgradient of MW12S/12D south of Tract II on property owned by East Coast Toyota.

This is acceptable. As the new wells have only been sampled once, these shall be sampled quarterly for one year to evaluate seasonal fluctuations in contaminant levels. All the new wells shall be sampled for VO+15 and BN+15. PCBs shall be included if appropriate based on area and/or previous detections.

d. A revised RAW is provided with this submittal. Arsynco states that although air sparging is still proposed, it is an expanding system, as opposed to a mobile system. Arsynco also states that no significant off-site migration has been identified. In fact, investigations by Arsynco indicate that VO contamination in Henkel well MW17 is from a source on the Henkel property and is migrating onto the Arsynco site.

Specific comments on the RAW are provided below. In regard to off-site migration, additional water level monitoring and synoptic water level measurements have been required above. Based on the information submitted by Arsynco, it does appear that the dichlorobenzenes and chlorobenzene historically detected in Henkel MW17 originate at Arsynco. It is recommended that Arsynco collect an updated sample for VO+15 and BN+15 from Henkel MW17.

e. Arsynco collected natural remediation parameters from a number of wells. Data is presented in Section 6.11. Specific comments are provided in the RAW.

f. An updated well search was performed and is presented in Appendix M of this submittal. Arsynco concludes that overall the well search identified no potable, downgradient receptors.

The well search is generally acceptable. However, contacting the water purveyor is not sufficient to ensure that all wells have been identified. Arsynco shall obtain billing lists for all properties located within ½ mile of the site and match that list to tax maps of the area. All establishments that do not receive a water bill shall be investigated to determine the water source for the property. Supporting documentation, i.e., the billing lists and maps, etc. shall be submitted to the NJDEP.

Barring the work required above, the NJDEP generally agrees with Arsynco's conclusion. From the information provided, it appears there are no domestic wells within ½ mile of Arsynco. Three non-community public supply wells, located at the Candlewyck Diner (#35), Rudox Engine & Equipment (#178) and Sun/Dic Acquisition Corp. (#193) were identified at less than one mile from the site. The Rudox well, which is 200 feet deep, is located at 0.35 mile; the depth of the casing was reportedly not available. The Candlewyck well is 0.5 mile from the site and is 225 feet deep with 51 feet of casing. Based on the flow direction as understood thus far, these wells are generally upgradient of Arsynco. Therefore, Arsynco is not required to sample the wells at this time. However, if ground water flow changes, or additional information indicates flow is other than currently understood, or if contamination is found to be more extensive, Arsynco may be required to sample these wells.

In regard to industrial wells, the well search identified a 170-foot deep well at Henkel and a 400-foot well at Lancaster Chemical. These facilities are located 0.1 and 0.2 miles from Arsynco. No casing length is provided for the Henkel well, however the Lancaster well is reportedly constructed with 311 feet of casing. Sampling of the Lancaster well is not required at this time, as the well is cased to a substantial depth. According to Henkel, their production well was previously abandoned.

g. Information on plume delineation, water level monitoring and flow direction is provided in section 6.11. Arsynco states that annual VO monitoring will continue at all wells until the ground water remedies are on-line.

Specific comments on section 6.11 are provided below. In regard to annual monitoring, additional water level measurements are required above.

8. Area X - Tract 2 Eastern Side of Site

Four surface water samples (DW1 – DW4) were collected from ditches on site in September 2002. Three were collected along the East Side of Tract 2 and one was collected at the southwest corner of the property where that ditch enters the site. The samples were unfiltered and analyzed for PP+40. The entire length of Berry's Creek, to which the ditches discharge, is classified as FW2-NT/SE2. Therefore, the data was compared to the Surface Water Quality Standards (SWQS) for both classifications. The only contaminants detected above both standards were arsenic, lead and mercury. Arsynco states that these metals were not used on the site and that arsenic is a regional problem. Arsynco does not propose any further action with respect to the ditches at the site.

Additional information regarding lead in samples DW1 and DW2 has been requested by the NJDEP in connection with the ecological evaluation. At this time, no additional work is required for the ditches on Tract 2 in regard to ground water.

9. Area XI – Ground Water

Ten off-site wells were installed during this phase of investigation, from December 2002 – April 2003. This included MW27S/D and MW28D to the west, MW29S/D, MW30S/D and MW31S to the north and MW32S/D to the south. All 47 on and off-site wells were sampled on May 19-20, 2003. Arsynco also conducted an extensive investigation of site and regional geology and hydrogeology, as well as an updated tidal study along the northern property boundary. Based on that information, Arsynco believes that contamination is migrating onto their site from the north, west and southwest.

MW11S continues to be the most contaminated shallow well on the site, with extremely elevated levels of VOs (BTEX). Wells MW14S and MW15S were sampled for PCBs using low-flow purging techniques. No PCBs were identified. Arsynco concludes that the low levels of PCBs previously identified were associated with sediment in the samples. PCBs were detected in MW29S at 657ppb (Arochlor 1248). This well was installed on the Northern Eagle Beverage property, between the MW15S/D cluster and Henkel MW17. Arsynco states that PCBs are elevated in ground water at Henkel (that's the reason for the existing slurry wall) and that the PCBs in MW29S are almost certainly attributable to that site. Arsynco further states that neither the slurry wall or capture zone at Henkel extend to this area.

Chlorinated VOs are the main contaminants of concern in the deep zone, particularly in MW11D and MW22D. Bis (2chloroethyl) ether was detected at 36.8ppb in MW6D. Arsynco states that this compound was never used on their site. However, the adjacent site to the south, Cosan Chemical, reportedly had up to 6,300,000ppb of this compound in HydroPunch ground water samples. Arsynco also states that the Cosan Chemical file indicates that deep ground water flow on their site is toward Arsynco wells MW6D and MW12D.

Flow from the west and north is addressed in comments B3 and C1 above.

In regard to bis (2chloroethyl) ether in MW6D coming from Cosan Chemical, this may be the case; however, additional work is required to support this argument. Seasonal ground water level monitoring has been required above to assist in determining the actual flow directions and frequency and duration of variations, etc. In addition, Arsynco shall determine the construction of the Cosan wells and collect synoptic water levels from both sites if appropriate. An area contour map showing all wells shall be generated from the data.

10. Receptor Evaluation

The nearest surface water bodies are the tidal ditches that border the site on the north, west, southwest and within Tract 2. Ultimately, these ditches discharge to Berry's Creek. Arsynco states that site ground water discharges to the ditches, but site related contaminants are not present above the SWQS. None-the-less, the surface water quality is poor, due to discharges from numerous sites. Deep ground water is impacted by the site, however, according to Arsynco, contamination in the deep zone does not migrate off-site. No subsurface utilities, basements, etc. would be impacted by this contamination.

An updated well search was included in this submittal. Seven domestic wells were identified within a one-mile radius of the site, however, none were within ½ mile and none were downgradient. Five public, non-community wells were identified within one mile, but none are downgradient. The nearest of these wells is 0.35 miles north of the site. Fifty-two wells classified as either industrial or irrigation were identified within one mile. Overall, Arsynco concludes that no potable, downgradient receptors were identified.

The NJDEP agrees that shallow ground water discharges, at least in part, to the ditches surrounding the site. However, Figure B-9 indicates that the drainage ditch between MW12S/D and MW32S/D is not keyed into the confining unit; the bottom of the ditch is within the shallow ground water zone. Therefore, it is possible for ground water to migrate beneath the ditch in the shallow zone. Note that the concentrations detected in MW32S are minimal and do support the argument that site ground water is discharging to the ditch, at least for the sampling events depicted. In regard to deep ground water, contamination does not appear to be migrating appreciably off-site to the south and east. However, due to the lack of off-site wells to the west, the presence of possible incorrectly constructed wells at Henkel and variable flow of site, it is not certain that contamination is confined to the site to the north and west. Additional work has been required above to make these determinations.

B. Remedial Action Workplan

1. Ground Water Remediation System

Shallow fill/soil and shallow ground water will be addressed via an air sparging system designed to stimulate microbial respiration. A bacterial plate count analysis indicated that a sufficient population of microorganisms capable of degrading BTEX is present. It was also determined that nutrients required for microbial metabolism are present.

Previously, horizontal sparge wells were proposed, as the vadose zone is thin and the meadow mat can be difficult to distinguish. Arsynco is now proposing vertical sparge wells, the depth of which will be pre-determined via cone penetrometer borings in each area. The radius of influence for an individual sparge well was determined to be seven feet when injecting up to 2 cfm at a pressure of 2-4 psi. Arsynco also proposed to revise the previous proposal for a "mobile" air sparging system. The currently proposed system will be permanent, but will be installed in an "expanding" fashion. The main area to be treated consists of the VO plume depicted on Figure 28, which includes VOs above 1000ppm in shallow soils. The total area to be treated is approximately 53,000sq. ft.; the depth (to meadow mat) is approximately 4.5 feet. In addition to the main plume, there are two small VO contamination areas near building 1. These are the areas of former soil sample PP-12 and MW19S and the former drum cleaning station near the NE end of building 1. The combined area of these locations is approximately 1,900sq.ft. the depth is approximately 4.5 feet. There are two other small areas of VO contamination located at soil samples VI-PD5, VI-PD5 (3), VI-PD5 (4) and PP-3. Shallow monitoring wells are proposed in each of these areas. Based on the results from the monitoring wells, these areas may also be included in the remediation. The VO contamination within the AOC VI pond sediments will be addressed separately and are not included in the air-sparging plan. Likewise, the VO impacted soil within the process waste fill area is being treated in conjunction with PCBs >500ppm and will not be included here.

The plan proposes to address the VO plume by separating it into four sections as illustrated on Figure 28 of the submittal. Approximately 60 air sparge points will be installed at 15-foot intervals beginning in Area 1. Each sparge well will be constructed with 3/8 inch PVC with eight inches of 20-slot screen set immediately above the meadow mat. A horizontal vapor recovery system consisting of two one hundred-foot sections of 4-inch diameter, 20 slot PVC screen will be installed approximately 50 feet apart. Once the first section of the system is installed, it will be activated and monitored for effectiveness and cost efficiency. Based on this evaluation, modifications to the system, if warranted, can be applied to the remaining sections to be remediated.

2. System Monitoring

Six one-inch diameter, 24-inch long stainless steel well screens will be installed from one to three feet below grade throughout each treatment cell. The annular space will be filled with gravel and the top will be sealed with bentonite-cement slurry. The bottom will be capped. Tubing will connect each monitoring point to the SVE manifold area and allow sampling of "gross" ground water quality at the water table interface. Each point will be purged and sampled for DO CO2, temperature, pH, specific conductivity and redox potential.

A baseline round of VO+10, DO, CO2, temperature, pH, specific conductivity and redox will be performed immediately prior to system startup in each section. MW11S will be sampled for these parameters in Area 2, the first section to be treated. Arsynco proposes to start up the initial system (Area 2) in a cyclical (on/off) mode for the first 14 days. The system will then be cycled off for 14 days. During the initial 14-day startup, samples will be collected from the six well screens and MW11S every 12 hours. MW11S will be monitored for BTEX, while the well screens are sampled for the parameters specified above. During days three to five, the screens and MW11S will be sampled for the same parameters once a day. This will be repeated on days seven, ten and fourteen. A similar program will be conducted during the 14-day shutdown period, after which the system will be re-started. It is anticipated that the system will continue to be operated cyclically, with data gathered during the initial period used to determine optimal operating and monitoring conditions. Following evaluation of startup in Area 2, installation of the air sparging system will commence in the second treatment zone. Similar startup/shut-down programs with monitoring will be conducted. These procedures will continue during successive installations throughout the four treatment zones.

Arsynco states that air sparging/soil vapor extraction (AS/SVE) is anticipated to be only the first phase of the remediation. Once the majority of the contaminant mass is removed and a decreasing trend is established for ground water contaminant concentrations, Arsynco expects to utilize monitored natural attenuation as the remedy. Arsynco reiterates that the aquifer should not be considered a Class II-A and that therefore, those ground water quality standards (GWQS) should not apply.

The air sparge and vapor extraction system is an acceptable strategy for ground water. Arsynco shall submit a plan for operating and monitoring specifics within Area 2 within 120 days of system startup. In regard to using natural

remediation following the active phase of the cleanup, this is conceptually acceptable. Arsynco may propose this once all source material has been removed, ground water contaminant concentrations have been significantly reduced and a decreasing trend can be demonstrated for each contaminant at all source wells. Note that a decreasing trend shall be established by applying the Mann-Whitney U Test to eight quarters of post-remedial sampling data.

3. Pond Sediments

The contaminated sediment layer at the base of the pond (between the clay liner and the overlying fill) will remain in place and be capped with asphalt. In addition, the two in-flow locations and the out-flow will be sealed within the pond boundaries using a cement/bentonite slurry. This is to prevent over-flow into these unlined areas. The chain link fence and deed notice proposed for Tract 1 fill also applies to this area.

See the comments above regarding the capping of the sediments. However, a well was previously required at soil sample VI-PD5, which is at the centrally located in-flow to the pond. Arsynco has agreed to install this well, as the soils contained elevated chlorinated VOs. Arsynco shall be certain that any remedy for the sediment layer is permanent and prevents both impact to ground water and over-flow to soil and/or surface water.

As stated above, the pond liner appears to be containing contamination, at least in regard to ground water.

4. Deep Ground Water

Arsynco states that the two major areas of deep ground water contamination are at MW11D and MW22D and concedes that the contamination in these wells is attributable to the site. MW8D contains chlorobenzene and chloroform, which are reportedly present in site soils located slightly to the west. Arsynco believes these compounds may be breakdown products emanating from the dichlorobenzene contamination in off-site Henkel well MW17. MW12D, located along the southern property boundary, contains PCE, TCE and 1,2-DCE sporadically. The levels of these compounds have also reportedly increased in the last two sampling rounds. Arsynco states that this contamination may also be migrating onto the site from the south and SW.

Arsynco cites several lines of evidence indicating that natural remediation is occurring and that site conditions are favorable for continuing biodegradation. Based on this evidence, Arsynco proposes to conduct four to six additional quarters of monitoring to evaluate natural attenuation rates of the chlorinated VOs in deep ground water. Aquifer testing will also be performed, after which all the data will be utilized to construct a fate and transport model for the VO contamination.

The May 2003 VO concentrations in MW11D (27,245ppb) and MW22D (48,360ppb) are too high to naturally remediate, therefore, the proposed monitoring is not necessary for evaluation of this remedy. Although the NJDEP cannot guarantee that natural remediation will be appropriate for concentrations less than 1ppm, in general, active remediation is required for levels greater than 1ppm. Therefore, Arsynco shall submit a revised RAW for active remediation of deep ground water, which generally addresses concentrations greater than 1ppm. As stated above, the ground water cannot be classified as other than II-A at this time.

The proposed aquifer test may still be useful for the development of an active remedy and is conceptually acceptable. The fate and transport modeling is not required at this time, as natural remediation is not acceptable.

In regard to other contaminated deep wells, additional water level monitoring is required above to determine whether contamination is migrating onto the site. The NJDEP is inclined to agree that contamination may be coming onto the site from Henkel, particularly as MW17 on that site is/has been heavily contaminated. However, the NJDEP cannot agree to the presence of off-site contamination coming from the west and/or south/southwest, without off-site data that demonstrates this. Existing wells located on those properties may be utilized if/when appropriate, i.e., if wells are screened across two units, the water levels may not be comparable, but the ground water quality data may be useful to demonstrate background concentrations. If existing wells are not available, off-site well pairs shall be installed. If background contamination cannot be demonstrated, Arsynco shall address the contamination in MW8D, MW12D, etc.

5. **Classification Exemption Area (CEA)**

Arsynco shall propose a CEA in accordance with the Technical Requirements for Site Remediation, N.J.A.C. 7:26E-8.

IV PERMIT REQUIREMENTS

1. Arsynco shall comply with all federal, state, and local laws, regulations, and ordinances in implementing the approved Interim Remedial Measure.

2. Arsynco shall submit applications for all required federal, state, and local permits to the appropriate regulatory authority within 30 days of the receipt of this Interim Remedial Measure. Should any condition or limitation of the permits be more stringent than those in the approved Interim Remedial Measure, then the permit requirements shall supersede the terms of this approval. Arsynco shall submit a copy of each application to the BNCM.

3. AIR PERMITS:

New Jersey Air Permits may be required for the discharge of vapors from the treatment unit to the atmosphere. Contact:

Bureau Chief
Bureau of New Source Review
PO Box 027
401 East State Street, Floor 2
Trenton, N.J. 08625-0027
(609) 292-9258

4. SOIL EROSION:

Soil Erosion and Sediment Control Certifications are required for any extensive soil sampling or cleanup projects that disturb more than 5,000 square feet of surface area of land including demolition of structures, construction of parking areas and clearing or grading of land for other than agricultural purposes. As appropriate, Arsynco shall contact the County Soil Conservation District for guidance in the development and approval of a Soil Erosion and Sediment Control Plan for the site.

5. WETLANDS PERMITS

Arsynco shall contact the NJDEP's Land Use Regulation Element at (609) 984-3444 to determine if the remedial activities at the above referenced site require a Wetlands Permit and/or a Transition Area Waiver or other applicable land use permits.

V REMEDIATION SCHEDULE

1. Due to the time that has lapsed, the remedial action schedule submitted with the Remedial Action Workplan is no longer accurate. Therefore Arsynco shall submit a revised remedial action schedule, within 30 calendar days of the receipt of this letter, in accordance with N.J.A.C. 7:26E. identifying the projected month and year for each task.

2. If modifications to any remedial action schedule are anticipated during implementation of the referenced Interim Remedial Measure, Arsynco shall submit a revised remedial action schedule. Based on a review of this schedule, the NJDEP will approve or disapprove the revised remedial action schedule. If the revised remedial action schedule is disapproved, the NJDEP will note the reasons for the disapproval.

3. If any current or anticipated delay is caused by events beyond the control of Arsynco, then Arsynco shall notify the NJDEP in writing within 10 calendar days of such event. Arsynco shall precisely describe the cause of the delay and request a schedule revision. Increases in the costs or expenses incurred in fulfilling the requirements outlined in this letter shall not be considered a basis for an extension and such extension requests will not be granted.

4. Arsynco shall notify the assigned Case Manager in writing at least 14 calendar days prior to the initiation of all investigation/remedial activities at the site.

VI ELECTRONIC DATA DELIVERABLE REQUIREMENTS

Pursuant to the Technical Requirements for Site Remediation (TRSR), N.J.A.C. 7:26E-3.13(c)3v, Arsynco shall submit all analytical data both as a hard copy and an electronic deliverable using the database format outlined in detail in the current HAZSITE application or appropriate spreadsheet format specified in the NJDEP's electronic data interchange manual. Please note that the electronic deliverables may be submitted directly to the Case Manager via email (linda.taylor @ dep.state.nj.us).

The Electronic Data Submittal Application (EDSA) is a software program which will perform an administrative and completeness check on electronic data prior to that data being reviewed, evaluated or used by NJDEP personnel. Arsynco shall ensure that it performs this check on all electronic data submitted to the NJDEP in the .txt, .wk1, or .dbf format to determine if the basic required information is included and correct. This routine is intended to decrease the occurrence of the NJDEP rejecting data for administrative errors or omissions.

For further information related to electronic data submissions, please refer to the Site Remediation Program's (SRP's) home page at the following Internet address: **http://www.state.nj.us/dep/srp/hazsite/** This website includes downloadable files, an explanation of how to use these files to comply with the NJDEP's requirements, the SRP's Electronic Data Interchange (EDI) manual, and Guidance for the Submission and Use of Data In GIS Compatible Formats Pursuant to "Technical Requirements for Site Remediation".

VII GENERAL REQUIREMENTS

1. Arsynco shall comply with all federal, state, and local laws, regulations, and ordinances.

2. Arsynco shall obtain all federal, state, and local permits prior to implementation of the approved PRAW and RIW. Should any condition or limitation in the permits be more stringent than those in the approved PRAW and RIW, then the permit requirements shall supersede the terms of this approval.

3. Arsynco shall collect and analyze all samples in accordance with the protocol outlined in the most current edition of the "NJDEP Field Sampling Procedures Manual" and the Technical Requirements for Site Remediation (TRSR), N.J.A.C. 7:26E.

4. Upon the written request by NJDEP, Arsynco shall submit for NJDEP review and approval any additional workplans deemed necessary by NJDEP during the implementation of a PRAW and RIW to fully delineate the nature and extent of environmental contamination associated with Arsynco. Arsynco shall implement and complete any such additional workplans, and submit the results, in accordance with the time frames set forth in the approved additional workplan. Arsynco shall revise and submit the required information within a reasonable time not to exceed 30 calendar days from receipt of written notification from NJDEP.

5. Arsynco shall submit the results or additional workplans, in triplicate in accordance with the approved schedule. Please note that only one copy of the Quality Assurance/Quality Control Deliverables is needed.

6. Arsynco shall submit a final and any interim remedial action report in accordance with N.J.A.C. 7:26E-6.6.

7. The Industrial Site Recovery Act (ISRA) requirement for remediation of all environmental contamination associated with Arsynco and the terms and conditions of the approved Partial Remedial Action Workplan shall be binding upon Arsynco, and its officers, management officials, successors in interest, assigns, tenants, and any trustee in bankruptcy or receiver appointed pursuant to a proceeding in law or equity.

If you have any question concerning this document, please contact the Case Manager, Linda L. Taylor, at (609) 633-1432.

Sincerely,

Stephen E. Maybury, Bureau Chief
Bureau of Northern Case Management

c: Leonard Schwartz, Aceto Corp.
Jim Haklar, USEPA
Chris Lacy, BEERA
Elizabeth Opitz, BGWPA
Bergen County Soil Conservation District
Mid-Bergen County Health Department

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JON S. CORZINE
Governor

LISA P. JACKSON
Commissioner

David Hird
Weil, Gosthal & Manges
1300 Eye St, Northwest
Suite 900
Washington DC 20005

JUN - 8 2006

RE: Industrial Establishment: Arsynco
Location: 13th Street, Carlstadt Borough, Bergen County
Block: 91 Lot: 1
Transaction: Cessation of Operations
Remedial Action Workplan Dated: December 31, 2003
ISRA Case #E93024

Dear Mr. Hird:

James Clabby, JMC Environmental, has contacted me regarding the Department's May 25, 2006 letter. Mr. Clabby pointed out that there is need for clarification on Item III 7.d (page 17).

Upon further review, the paragraph should read as follows:

d. A revised RAW is provided with this submittal. Arsynco states that although air sparging is still proposed, it is an expanding system, as opposed to a mobile system. Arsynco also states that no significant off-site migration has been identified. In fact, investigations by Arsynco indicate that VO contamination in Henkel well MW17 is from a source on the Henkel property and is migrating onto the Arsynco site.

Specific comments on the RAW are provided below. In regard to off-site migration, additional water level monitoring and synoptic water level measurements have been required above. Based on the information submitted by Arsynco, it does appear that the dichlorobenzenes and chlorobenzene historically detected in Henkel MW17 originates at Henkel. It is recommended that Arsynco collect an updated sample for VO+15 and BN+15 from Henkel MW17.

Arsynco shall be advised that the Department is recommending that Arsynco continue to sample Henkel MW17 in an effort to see how contaminant levels and water levels in this well are potentially affecting the ground water at the Arsynco site.

If you have any questions regarding the site, please contact me at 609-633-1432.

Sincerely,

Linda L. Taylor, Case Manager
Bureau of Northern Case Management

c: Leonard Schwartz, Aceto Corp.
Jim Clabby, JMC Environmental Consultants
Jim Haklar, USEPA
Chris Lacy, BEERA
Elizabeth Opitz, BGWPA
Bergen County Soil Conservation District
Mid-Bergen County Health Department

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David Hird
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1300 Eye St, Northwest
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MAY 25 2006

RE: Industrial Establishment: Arsynco
Location: 13th Street, Carlstadt Borough, Bergen County
Block: 91 Lot: 1
Transaction: Cessation of Operations
Remedial Action Workplan Dated: December 31, 2003
ISRA Case #E93024

Dear Mr. Hird:

The New Jersey Department of Environmental Protection ("NJDEP") has completed its review of the proposed Remedial Action Workplan. Please be advised that the Remedial Action Workplan cannot be fully approved at this time because further delineation of the ground water is required. However, it is approved as an Interim Remedial Measure pursuant to the authority vested in the Commissioner of the NJDEP by the Industrial Site Recovery Act (ISRA) and delegated to the Assistant Director of the Responsible Party Remediation Element pursuant to N.J.S.A. 13:1B-4. Please refer to the requirements noted below.

The Interim Remedial Measure shall not limit, restrict, or prohibit NJDEP from directing on-site or off-site cleanup, if deemed necessary by NJDEP, under any other statute, rule, or regulation.

Please be advised that this approval does not represent a full Remedial Action Workplan Approval and, therefore, the Interim Remedial Measure does not fully satisfy the requirements of N.J.A.C. 7:26B-1.10(c)2. Also be advised that "the owner or operator of an industrial establishment shall not sell or otherwise transfer the industrial establishment until ... a Remedial Action Workplan has been approved by the Department..." shall remain in effect until the NJDEP has issued a full Remedial Action Workplan Approval or a No Further Action letter or has entered into a Remediation Agreement with the Department. By issuing this Interim Remedial Measure, NJDEP continues to reserve its right to pursue any penalties allowable under the law for violations of the ISRA statute or regulations associated with this transaction.

I AREAS OF CONCERN REQUIRING FURTHER ACTION

During the review of the December 2003 Remedial Action Workplan, it became evident that there were a number of areas of concern that were initially identified at the site that did not require further action and had not received no further action previously. There were also several that required additional information to verify that no further action was required for a particular area of concern. James Clabby, JMC Environmental, provided the case manager clarification for these areas via email on July 7, 2005. Based on the review of the NJDEP's files and the information provided, no further action is required for the following areas of concern.

A. Area I

Non-Contact Cooling Water Pond

B. Area II

Former AGST Farm Location

C. Area III

Former Building 5 Septic Tank

D. Area IV

Building 1 – Possible Former Aboveground Storage Tanks
Building 2
Building 8B – Aboveground Storage Tank
Building 8 – Spill

E. Area V

Caustic Soda Spill
Solid Material Spill

F. Area VII

Shed
Leaking Drum

G. Area IX

Wastewater Treatment Sludge
Spill – Sulfuric Acid and Caustic
Leaking Drum
Drum Overflow – 3,3,5-trimethylcyclohexanol
Reactor Vessel
Miscellaneous Spills
Compactor and Brine Cooling Areas
Brine Compressor Shed
Leaking Fuel Oil Drum
Aboveground Storage Tank – Mono Isopropanol Amine
Storage Tanks
Excavation Ditch
Tank Wagon Transfer Pump

II SOIL REQUIREMENTS

Over the course of the investigation the areas of concern have been consolidated into ten areas due to proximity and contaminants of concern. These ten areas have been further divided into two tracts. Tract 1 is approximately 9.5 acres and encompasses areas I to IX, which are related to operational areas of the site. Tract 2 is approximately 2.8 acres and is also identified as area X. This is the portion of the site that is predominantly tidal wetlands and has had minimal impact from the operational areas of the site. Ground water is addressed as Area XI.

Area I Parking Lot, Office Buildings and Pond
Area II Northwest Portion of the Site
Area III Northeast Portion of the Site
Area IV Plant Production Area
Area V Building 19 and Northeast Tank Farm
Area VI Former Pond Area
Area VII Primary Tank Area
Area VIII Southern Portion of the Site
Area IX PCB and Site Fill Investigation
Area X Tract 2 (Eastern Side of the Site)
Area XI Ground Water

The workplan also included a response to the NJDEP letters dated November 7, 2002 and February 4, 2003.

A. RESPONSE TO NJDEP LETTERS DATED NOVEMBER 7, 2002 and FEBRUARY 7, 2003

1. AREA I - PARKING LOT, OFFICE BUILDINGS AND POND

a. Discharge point of the floor drain

Soil sample (B2-FD) was collected from the first 6-inches of soil immediately below (1.5-2.0' below grade) the drain discharge point and was analyzed for PP+40 and TPH. The results indicate the high levels of xylenes (219 ppm), lead (661 ppm) and PCBs (31 ppm). To highlight the key issues:

- Xylenes were delineated at the same depth at samples VIII-3, VII-18, IV-7 and I-2
- Lead was ascribed to historic fill
- PCBs are widespread at the site

Arsynco states that the xylenes will be addressed by expanding the proposed volatile organic compound (VOC) air sparging treatment.

The proposal is acceptable. Lead and PCBs shall be addressed under site-wide deed notice and cap.

b. Non-Contact Cooling Water Pond Closure

Sediments at the base of the former pond were sampled for PP+40 prior to pond closure, and no contamination was identified. No further action (NFA) is proposed.

The proposal is acceptable.

2. AREA II -NORTHWEST PORTION OF SITE

a. RCRA Storage Area

Elevated levels of PAHs, mercury and nickel were detected in soil sample II-7, at the downgradient edge of the asphalt. PAHs found in the area were previously ascribed to the presence of historic fill material. However, Figure 3 indicates that sample II-7 is approximately 20 feet away from the storage area. Arsynco clarified that the paved area was intact and in good condition and that the area was always paved. Also, the paved area was sloped in the direction of sample II-7 for storm water run off. Sample II-7 was collected at the depositional area of the run-off.

The proposal to include this area as part of the site wide engineering and institutional controls is acceptable.

b. PP-12 Sample Location

PP-12 Sample Location indicated benzene and toluene at 24 ppm and 1300 ppm respectively and the contamination extends to the groundwater table. The delineation of benzene and toluene is complete. Arsynco will include this area within the proposed VOCs air sparging treatment system.

The proposal is conditionally acceptable. Arsynco shall verify that the delineation samples were collected at the same depth (as the highest contamination of VOCs). The sample locations and depths shall be provided on a map. Arsynco shall be advised that if the concentrations do not decrease as a result of the air sparging, a soil investigation will be required.

3. AREA III – NORTHEAST PORTION OF THE SITE

a. Area III – Former Drum Cleaning Station/Brick Pad

Soil sample III-12 contained elevated levels of benzo(a)pyrene (0.96 ppm), benzo(k)fluoranthene (1.8 ppm), arsenic (25.7 ppm), PCBs (3.8 ppm) and TPH (14,000 ppm) and VOCs (BTEX). Elevated levels of VOCs (BTEX and Chlorinated VOCs) and TPHCs were identified in samples PP-9, III-8 and III-12.

Arsenic will be addressed by a deed and cap as historic fill material. PCB remediation is addressed separately in RAW section.

Previous sampling conducted in this area identified the following, in addition to the PCBs:

Elevated levels of VOCs in soil samples PP-9, III-8 and III-12: benzene (up to 19 ppm in sample III-12), xylenes (up to 120 ppm in sample PP-9), chlorobenzene (high of 45 ppm in sample III-8) and chloroform (high of 250 ppm in sample III-12).

Soil sample III-12 also contained TPHC at a concentration of 14,000 ppm and an elevated level of arsenic (25.7 ppm). Arsynco stated that only lateral delineation of VOCs and TPHC was performed. The volatiles and TPHCs will be included in the air sparging area.

Sample PP-9 also contained an elevated level of nickel (570 ppm).

Elevated levels of benzene and chlorobenzene have been detected in shallow well MW-8S in this area. Deep well MW-8D has also contained elevated levels of benzene, toluene, chlorobenzene and chloroform. Since groundwater has been impacted in this area, Arsynco proposes to include the area of the Former Drum Cleaning Station and soil samples PP-9, III-8 and III-12 within the VOC air sparging treatment system.
The proposal is conditionally acceptable at this time.

- Arsynco shall include sample location PP-9 in the site wide deed notice for nickel.
- Arsynco shall clarify the statement " only lateral delineation of VOCs and TPHC was performed" because fig 4. indicates no lateral sampling was performed to the south (towards Bldg.1) of the contaminated sample III-12.
- In addition, no vertical delineation for the BTEX and chlorinated VOCs was indicated. Therefore, if after active remediation of sources of VOs in soil and groundwater, groundwater VOC standards are still being exceeded, then additional soil sampling in soils of this area shall be conducted.
- The post-remedial verification soil samples shall be collected from within the saturated zone soils at a depth below the contaminated locations.

b. Area III - Former Building 5 Septic Tank

One soil sample (B5ST-1) was collected from the soils at the base of the excavation (7-7.5 feet) in this area following removal of the septic tank. As noted in the June 1997 RIR, the tank consisted of a significantly deteriorated steel vessel with numerous holes throughout the tank, and the tank was so degraded that it was removed in pieces. The tank was virtually empty and contained only a small amount of groundwater. The water in the tank drained into the excavation as the tank was removed.

The soil sample B5ST-1 was analyzed for VO+10 and BN+15, and no elevated levels of contaminants were identified. In addition, shallow well MW-21 S was installed in this area, and no contaminants have been identified at elevated levels in this well. Therefore, no further action is required for this area.

c. Area III – Recent Off-site Soil Sampling

During the installation of off-site deep well MW-29D, a series of soil samples were collected from the borehole. This well was also located in the area where Henkel claimed that Arsynco had previously stored drums, and the area where Henkel suggested that the contamination present in their well MW- 17 had originated. The primary contaminants present in Henkel well MW- 17 consist of 1,2,4-trichlorobenzene (1,2,4-TCB), and 1,2-, 1,3- and 1,4-dichlorobenzene (DBC isomers) at levels indicative of DNAPL material in that well. Concentrations of BTEX compounds have also historically been present in Henkel well MW-17 at total concentrations generally in the range of 3,000 to 5,000 ppb.

A total of seven soil samples were obtained from the MW-29D. The laboratory results indicate, that only a low level (less than 0.2 ppm) of a phthalate was detected. These results and the results of the groundwater model prepared by Arsynco (see Appendix D), indicate that the source of contamination in Henkel well MW- 17 is not associated with the Arsynco site. Therefore no further action is proposed.

The proposal for no further action is acceptable. There are no soil contaminants above the residential direct compact cleanup criteria. The ground water in this area (MW29) is not impacted and the ground water contamination at Henkel MW-17 appears to originate on the Henkel site (see the ground water comments below).

4. AREA IV - PLANT PRODUCTION AREA

Area IV is the central portion of the site. This area includes most of the manufacturing buildings Buildings 1, 3, 4, 5, 6, 7, 8, 9, 12 and 14, as well as the Effluent Treatment Basin (ETB) and nearly all of the facility's subsurface process drainage lines, storage areas and a transformer bank. VOC contamination extends below the water table throughout a large part of Area IV. Areas of BN and metals contamination were identified, primarily in the fill material below former site structures.

Arsynco proposed to treat VOC levels within the shallow soils via an active air sparging system. Arsynco proposes to address the BN and metal contamination via a Deed Notice and engineering controls.

The proposals are conditionally acceptable. The wastewater treatment basin was considered an obvious source. Therefore, the NJDEP's previous recommendation, "If *after active remediation of sources* of VOs (BTEX and/or chlorinated VOCs) in soil and groundwater, groundwater VO standards are still being exceeded, then additional soil sampling and delineation of the sources of VOs in soil will be conducted" still applies.

In addition, Figure 5 erroneously lists trichloroethene (TCE) present in soil sample IV-10 at a concentration of 27 ppm. The contaminant reference in sample IV-10 should have been 1,1,1-Trichloroethane (TCA) at 27 ppm. Future figures shall be corrected to reflect the proper contaminant and level.

The lead concentration identified in sample IV-10 (27,000 ppm) exceeds the historic fill maximum concentration of 10,700 ppm. Therefore, prior to the installation of the proposed engineering/institutional controls, Arsynco shall complete the vertical and horizontal delineation of to the property boundary.

5. AOC IV- Building Floor Slab and Chip Sampling- PCBs and Dioxin Issue

NJDEP conducted a dioxin sampling on the site in 1985. Fifteen soil samples were collected by NJDEP at that time from various locations throughout the site, and no dioxins were detected at any concentrations.

In a letter dated November 7, 2002 the NJDEP noted that the area of Building 3 may not have been sampled by NJDEP during the 1985 program. Also this Building was a potential concern for PCDDs/PCDFs because heat transfer oil containing PCBs was heated in this building.

Arsynco acknowledges that PCDDs/PCDFs can be formed when combustion occurs in the presence of a chlorine source but noted that there are many potential sources of dioxins that may be found in soils, including depositions from many type of air emission sources i.e., "background" levels of these contaminants.

Arsynco collected three (3) soil samples from the 0-6" increment of soil/fill material in the area of Building 3. Soil sample B3-1(DI) was obtained from the first 6-inches of soil where the former boiler room and the base of the heat transfer system was reported to have been located. Samples B3-2(DI) and B3-3(DI) were collected from the first 6-inches of soil immediately below the floor slab of Building 3. All three (3) samples were analyzed for dioxins and furans.

Only octachlorodibenzodioxin (OCDD) was detected at 338 parts per trillion (ppt) and 2050 ppt in samples B3-1(DD and B3-3(DI), respectively. These concentrations translate to 0.000338 ppm and 0.002050 ppm in soil.

OCDD is the most common and the least toxic dioxin congener, having a 2,3,7,8-TCDD Toxic Equivalency Factor (TEF) of 0.001. Therefore, since OCDD was the only congener detected in either sample, the Toxic Equivalency Quotient (TEQ) for samples B3-1(DI) and B3-3(DI) are 0.338 ppt and 2.05 ppt, respectively. The USEPA has utilized a 1 ppb TEQ (1,000 ppt) cleanup level for dioxin in residential soil and a range of 5 ppb to 20 ppb TEQ (5,000 ppt to 20,000 ppt) for industrial soils at Superfund/RCRAsites (OSWER Directive 9200.4-26, *Memorandum Subject: Approach for Addressing Dioxin in Soil at CERCLA and RCRA Sites,* April 13, 1998). This USEPA document states that these levels selected by USEPA are protective of human health and the environment.

Please note that the lab results for sample B3-2(DI), also collected from below the Building 3 floor slab, listed two PCDD congeners at *estimated* values of 1860 ppt and 1340 ppt, respectively because of QA/QC issues. Based on the TEF of 0.01 for both 1,2,3,4,6,7,8-HpCDF and 1,2,3,4,7,8,9-HpCDF (0.01), the sum of the TEQs for sample B3-2(DI) was reported at 32.0 ppt (18.60 plus 13.40). These concentrations are also below the soil cleanup criteria noted by USEPA, as discussed above.

Samples B3-2(DI) and B3-3(DI) were obtained from within the ash and cinder historic fill material below the 6-inch thick concrete floor slab of Building 3. Based on their physical properties, PCDDs deposited to soil will strongly adsorb to particulates and organic matter and will generally not migrate in soil (or through concrete). As a result, the presence of these low level compounds in the ash fill material *below* the Building 3 floor slab strongly suggests that they are related to historic fill material at the site and are not a result of former site operations.

Based on the recent data obtained, as well as the historic data collected by NJDEP in 1985, no further action is proposed with respect to PCDD/PCDF sampling at the Arsynco site. Arsynco will properly dispose of the Building 3/9 slab and the Building 6 slab off-site.

The proposal is acceptable.

6. AREA V - BUILDING 19 AND NORTHEAST TANK FARM

This area of the site contained Building 19, a diked aboveground tank farm and an area to the east of the tank farm which had historically been used for various amounts of material and drum staging.

The highest levels of ethylbenzene and xylenes were identified in sample DJS-009, at 2800 ppm and 18,000 ppm respectively. Arsynco stated that previous site data has demonstrated that contaminant levels decrease substantially with depth in the meadow mat.

Additional soil sampling was required by NJDEP to delineate the extent of BTEX compounds.

In December 2002, a single soil boring (V-27) was installed in the area of former soil samples DJS-009 and ARSD-33. Soil boring V-27 was located approximately 5-6 feet to the north of former sample ARSD-33 and approximately 1-2 feet north of the apparent location of former sample DJS-009.

Sample V-27A was collected from the spilt spoons (via VOC syringe and methanol preservation method) at a depth of 1.0-1.5' below surface grade. This increment also corresponded to the highest PID reading obtained in the boring.

An additional sample (V-27B) was collected from a depth of 5.0-5.5' in order to document soil condition below the former ARSD-33 and DJS-009 locations. Sample V-27B was collected from a depth corresponding to the native meadow mat layer in this area.

Both of the additional soil samples (V-27A and V-27B) were submitted to the laboratory and analyzed for BTEX. The results demonstrate that no elevated concentrations of BTEX were detected in either of the delineation samples, completing the delineation of soil in this area.

Please note that an additional shallow well (MW-3 IS) was also installed at this location in December 2002. Benzene (10.1 ppb) was the only VOC identified above GWQS in this well.

The proposal to include this area as part of the VOC remediation is acceptable. Arsynco will continue to monitor VOC concentrations in the ground water in Area V as part of the proposed active treatment for VOCs in the shallow fill soil and shallow Ground water at the site. See the Ground Water Section below for further comments and requirements.

7. AREA VIII - SOUTHERN PORTION OF SITE

A diked 12,000-gallon toluene AST (tank 73) was located in the western portion of Area VIII, adjacent to Building 2. The former RCRA storage area was also located in Area VIII, to the south of Building 18 and adjacent to the gravel parking lot (Area 1). Some parts of this area were determined to contain industrial and process-type waste materials and indicates the most significant concentrations of PCBs on the site. Elevated levels of VOCs, BNs, TPHC, phenols, and metals (including non-fill-related metals) were also detected.

Since a large portion of the area contained PCB concentrations above 500 ppm, Arsynco proposes to excavate the majority of the impacted material in this area and dispose of it off-site. An additional shallow well will also be installed in the area of former sample PP-3. The proposed VOC treatment system will be expanded into this area if required based on the data from the proposed well point.

The proposal is conditionally acceptable.

Post excavation sampling shall be performed for all the parameters of concern for the area(s) according to section 6.4 of the TRSR. A map, preferably color coded, shall be submitted to indicate appropriate sampling frequency, depth, parameters and results.

Sampling for the drainage ditch that extends across the southern boundary of Area VIII (although portions of the drainage ditch may be off-site) shall be performed according to the TRSR. The results and the associated map shall be included in the narrative of this area and the BEE report.

8. Area IX: PCBs across the entire site in both Tract I *and* Tract II

The characterization of PCBs across the entire property (Tract I and Tract 2) was addressed through implementation of a site-wide grid sampling system. Soil borings and test pits were installed and used to document the types and extents of fill material across the site.

However, the fill material within the southeast area of Tract I (Area VIII) also contained industrial and process-type waste materials (still bottoms, etc.). Based on a review of aerial photographs it was determined that the fill was placed in this area of the property in the 1950s and 1960s, with the most significant filling operations occurring between 1960 and 1968 (prior to Arsynco).

Some fill material is also present above the native meadow mat layer on Tract 2. The lateral extent of fill material on the site is illustrated on Figure 26.

A total of 34 grids (grids G-1 through G-34), each measuring 100 feet by 100 feet, were established on Tract 1. Additionally 12 grids were established on Tract 2 of the property (grids T2-GI through T2-G12). Samples were collected from both surface and subsurface locations in all grids. All areas of the property were sampled, including areas below the floor slabs of some site buildings. A total of 205 soil samples were previously analyzed for PCBs.

The sample results indicated exceedance of PCBs in majority of the grids established on the property as follows:

- High levels of PCBs within the top 2-feet of fill material across the entire site (Figure 12).
- High levels of PCBs within the majority of the 2-4 foot of fill material across the site (Figure 13).
- High levels of PCBs were at a depth of 4-feet only in the area where process was located, in the southeast part of Tract 1, and within the contaminated sediment layer located at the base of the former pond in Area VI (Figure 14).
- PCBs of 2 – 5 ppm was in native soils (i.e., meadow mat below below fill material) where process was located (Figure 15).

Arsynco stated that the extensive site sampling and characterization activities have not documented any correlation between PCB levels and other contaminant types (e.g. - petroleum solvents).

PCBs within Tract 2 were generally at levels below 31 ppm, with the exception of sample VI- 16. Excavation and off-site disposal of the "hot spot" (the area of sample VI-16) is proposed. No elevated levels of PCBs were detected in native soils below 2.5 feet across Tract 2.

In general, various PCB isomers were also found at various concentrations and depths within the fill material in areas away from historic production and storage areas (e.g. - western part of property and east edge of Tract 2, along 16th Street) and areas below building floor slabs. However, areas of the site that contain the most significant concentrations of PCBs are clearly related to historic site operations and the burial of process wastes prior to 1969.

Since it is difficult to differentiate if some PCBs are fill related and not from the historic site operations, Arsynco shall address the PCBs issue separately from the historic fill material.

9. AREA XII- BASELINE ECOLOGICAL EVALUATIONS:

The NJDEP also completed the review of the March 12, 2004 document titled "Response to NJDEP Comments on Arsynco BEE." Based on that review, the NJDEP has the following comments.

I.A. Page 6 (2.2.2 Soils), Table 11, 15 and F-1: The response is conditionally acceptable. In addition to the proposed hexavalent chromium soil analysis, the proposed samples shall also be analyzed for total chromium to confirm prior total chromium results and to correlate total chromium results with potential hexavalent chromium levels.

Note that the NJDEP "in-house" phytotoxicity based benchmark of 200 ppm trivalent chromium (total chromium result assuming no hexavalent chromium) is used for upland soil screening puposes. Arsynco may use this trivalent chromium benchmark for upland soils versus the 1 ppm Oak Ridge National Laboratories (ORNL) benchmark for hazard quotient (HQ) calculations, etc.

I.B. Page 17 (5.1) Soil): It is stated that a limited number of VOCs and metals in monitoring wells slightly exceeded the applicable aquatic chronic surface water quality standards (SWQS) in wells MW-9s and MW-13s(R).

The statement is confusing since there are no aquatic SWQS for benzene. It is assumed that the intent was to indicate that the human health standards were only slightly exceeded. In future documents addressing ecologiacl risk, references to human health benchmarks shall be excluded. The National Oceanographice and Atmosheric Administration (NOAA) Screening Quick Reference Tables (SquiRTs) may be used as a source of additional sediment and surface water benchmark.

The response is otherwise acceptable.

I.C. Page 23 (6.2.9 Tract 2 Soil), Page 24 (6.3 Results of Sediment – Tract 2), Page 25 (2nd Paragraph): The response is acceptable.

I.D. Page 27 (Section 7) bullet item, Appennix B (Surface Water sampling results), Table F-22): The response is acceptable. It is confirmed that the aquatic, acute, marine SWQS for lead is 8.1ppb.

I.E. Page 30 (Section 8.0 Conclusions): The response is acceptable.

I.F. Table 17: The response is acceptable.

I.G. Appendix E (Surface Water Screening Benchmarks): The response is acceptable.

I.H. Appendix E (Page 3 and 4: Phytotoxicity and Wildlife Screening Benchmarks): The response is acceptable. Please note that the additional ORNL document was recommended because the ORNL Preliminary Remediation Goals (PRG) document summarizes prior ORNL document and provide additional "user friendly" features (converts wildlife dose benchmarks to soil benchmarks, etc.) not because updated benchmarks were required.

Arsynco shall continue to address all ecological related issues, site-wide and/or AOC specific, in terms of ecological concerns in a stand-alone ecological document.

B. REMEDIAL ACTION WORKPLAN (RAW)

1. Summary

Based on the contamination present at the site, Arsynco is proposing a site-wide remedial strategy instead of an area by area remediation. The following is a summary of the contamination present at the site (both Tracts 1 and 2).

- PCB contamination of the soil and sediment at levels greater than 50 ppm on Tract 1. This contamination is subject to the USEPA Toxic Substance Control Act (TSCA). Arsynco submitted a Risk-Based Remediation Request to USEPA on October 8, 1998 with modifications submitted on October 11, 1999 and October 4, 2004. USEPA is preparing an approval for public comment.

- The concentrations of semivolatiles/PAHs, some metals and more widespread concentrations of PCBs are located throughout nearly all of Tract I.

- The PCBs are present at levels of 0.49 to 50 ppm throughout Tract 1.

- The levels of BNs, metals, VOCs, phenols and TPHC identified within the process-type waste materials in the southeast part of Tract I (Please note that this process type material also contains PCBs >500 ppm and is the subject of the PCB remedial proposal currently being reviewed by USEPA);

- The VOC contamination (primarily BTEX) present within in the shallow fill material on Tract 1;

- The VOC contamination (primarily BTEX) identified in the shallow groundwater within the fill material overburden on Tract 1;

- The contaminated sediment layer within the old pond (Area VI) located on the eastern side of Tract 1 contains all of the above contamination and Chlorinated VOCs;

- The Chlorinated VOCs contamination is in the deeper groundwater below the meadow mat layer at the site;

- The metals, VOC (> 1000 ppm) and PCB contamination associated with the *sediments* present on Tract 2.

It should be noted that the contamination at the site is attributed to both historic fill and operation-related contamination. Some of the contaminant constituents are the same for both, fill and operation related contamination. Therefore, the remedial action proposed for Tract 1is basically to remove or treat areas of significant contamination. Residual contamination, both fill and operation related, will remain in place with appropriate engineering and institutional controls. Again it should be noted that this remediation excludes PCB contamination greater than 50 ppm, which will be addressed by the USEPA.

2. Historic Fill Material

Arsynco proposes to place institutional and engineering controls on the site to address the historic fill contamination. Much of Tract 1 has historic fill related contamination. The fill was utilized throughout the site to raise the marshy areas to suitable grade for the industrial use of the site. Tract 1 also contains operational related contamination. The institutional and engineering controls will also address any residual process related contamination on Tract 1, excluding the TSCA regulated areas.

Following active remediation of the operational related contamination, described below, Arsynco will install an asphalt cap across the entire Tract I, with the exception of the TSCA remediation areas and the existing site office building (Building 16). Please refer to Figure 27 for an illustration of the approximate boundaries of the areas of the

site to be paved. In addition, a six-foot chain link fencing will be placed/maintained around the perimeter of the Tract I parcel.

Arsynco also proposes an institutional control for the limited area of historic fill material on Tract 2 where lead was identified below NRDCSCC. This area encompasses only the location of sample TR2-25 along 16th Street. However, the Deed Notice will also cover the majority of sediments on Tract 2.

Contaminant	Highest Concentration (ppm)	Sample Depth Below Grade Location	(Feet)
Tract I			
*Antimony**	197	V111- 12	0-0.5
	364	VIII-22	3.0-3.5
Arsenic	155	I-IA	0-0.5
Beryllium	20.2	VI-6	.5-1.0
Cadmium	46.7	VIII-12	0-0.5
*Copper *	1300	PP4	0-0.5
Lead	27,000	IV-10	.5-1.0
*Mercury**	31.9	11-7	.75-1.25
*Nickel**	3,500	PP-4	0-0.5
Thallium*	8.2	IV-15	0-0.5
Zinc	3,680	VI-6	.5-1.0
Benzo(a)anthracene	22	IV-6	1.0-1.5
Benzo(a)pyrene	14	IV-6	1.0-1.5
Benzo(b)fluoranthene	17	IV-6	1.0-1.5
Benzo(k)fluoranthene	6.6	IV-6	1.0-1.5
Indeno(1,2,3-cd)pyrene	9	IV-6	1.0-1.5
*Chrysene**	20	IV-6	1.0-1.5
Dibenz(a,h)anthracene	3.1	IV-6	1.0-1.5
*Di-n-butylphthalate**	510	VII-8	1.0-1.5
*2,6-Dinitrotoluene**	3.9	111-4	0-0.5
*2,4-Dinitrotoluene**	11	111-4	0-0.5
Tract 2			
Lead	443	TR2-25	0-0.5

The contaminants with Asterisk* and PCBs are generally ***not*** Historic Fill related.

The proposal is conditionally acceptable. Arsynco shall note that PCBs and the compounds above that are noted with an Asterisk* are not considered fill related. However, these compounds are present in the fill and it is appropriate to remediate them in the same manner as the historic fill material. Arsynco shall identify these compounds as process related in the institutional control.

3. Tract 1 fill/soils with PCB Levels < 50 pm

PCB contamination is found both in the fill and native soil on Tract 1. Areas where the contaminant level is greater than 50 ppm is being addressed under the USEPA TSCA Risk Based Approval. Arsynco estimates that there is 55,000 tons of soil that has PCB contamination at levels between 0.49 ppm and 50 ppm. Since the area where this contamination is present overlaps the areas of historic fill, Arsynco proposes to include this contamination in the institutional and engineering controls as depicted above in the Historic Fill section.

The proposal is acceptable. Arsynco is aware that the PCB contamination is most likely from an operational discharge. Although this does not alter the remedial approach the institutional control shall clearly state that this material is operational related and not fill related.

4. Contamination in the Area of Process-Type Fill Materials in Southeast Part of Tract 1

There are elevated levels of BNs, metals, VOCs, phenols and TPHC identified in southeast portion of the site where the process-type waste materials were found. This area also includes PCBs greater than 500 ppm as well. In accordance with the TSCA Risk Based Remediation, this area will be excavated as part of the PCB remedy. Arsynco will collect post-remediation samples to confirm that the area has been remediated. Once PCB levels are below 50 ppm, the excavation will be compete and any residual contamination that remains above the RDCSCC will be included as part of the institutional and engineering controls.

This is conditionally acceptable. Arsynco shall analyze the post-excavation samples for BNs, VOCs, metals, phenols and PHCs as well as PCBs. Sampling for all parameters allows Arsynco to document what contaminants are present at the site in the institutional control.

5. VOC Contamination in the Shallow Soil/Fill Material and Shallow Ground Water

Generally, elevated levels of BTEX compounds and chlorinated volatiles, in shallow soil/fill material are evident within large areas (contiguous and/or isolated) on site.

The areas of VOC contamination identified are related to historic site operations. Arsynco states that the most significant levels of VOCs in ground water are located within the main area of this plume. Based on the sampling data obtained, it is estimated that approximately 78,000 pounds of VOCs are present in the fill material overburden within the largest area of the plume, where total VOCs were identified at levels >1,000 ppm, as shown on Figure 16A. This amount does not include the high levels of chlorinated VOCs contained within the former pond in Area VI. This amount also does not include the VOCs associated with the process-type waste materials in the southeast part of Tract 1, where PCB levels >500 ppm are also indicated, where a PCB remedial program is proposed to the USEPA.

Please note that the area of the former pond contains VOC in the sediment layer. However, Arsynco states that it is not directly connected with the remainder of the VOCs shown in the area of Building 8, Building 19 and Building 6. As such, the remedial proposal associated with the pond area is provided separately.

Arsynco is proposing to install and operate the air sparging system in an expanding (not mobile) fashion. The conceptual remedial action plan for this area is to enhance biological activity by the installation of a vertical air sparging system and the subsequent recovery of VOC emissions by the installation of a horizontal vapor recovery system.

The remediation of the VOCs throughout this area will involve two separate "phases" as follows:

- The first phase - active treatment of shallow soils/fill and shallow groundwater in the VOC impacted areas using air sparging system.
- The second phase- monitored natural attenuation processes under a classification exemption area (CEA).

The primary objective is to introduce additional oxygen via the sparge air to increase in-situ microbial respiration and enhance the biodegradation of VOCs in fill material and shallow groundwater. Once the main source areas are treated, contaminant levels in soil have been reduced and a significant improvement in ground water quality is documented (determined by establishing a decreasing trend), the first phase of active treatment will be considered complete.

Arsynco states" as long as residual VOC contaminants in the soils are not adversely impacting groundwater, some elevated levels of VOCs can remain in site soils as part of the deed notice". Confirmatory soil sampling at 0-6 inch increment of soil above the water table will be conducted for BTEX for the purposes of a Deed Notice

The proposal is conditionally acceptable. The area for air-sparging include soils areas with > 1000 ppm of BTEX only. Arsynco shall address or clarify the remediation of soil areas with < 1000 ppm of BTEX.

Although it appears that the VOC contamination is not impacting the remaining building on-site, Arsynco shall address any potential indoor air contamination from the remaining VOCs in soils and ground water should buildings be constructed in the future. If applicable, generation of site specific values from Johnson and Ettinger Model (J&E model used by EPA) shall be required for appropriate future use scenario. If required, the most recent updated J&E model

(December 2000, on the Internet at http://www.epa.gov/oerrpage/ superfund/programs/risk/ airmodel/johnson_ettinger.htm) shall be used.

To address a source or sources of Chlorinated VOCs across the site, isopleth maps shall be provided for chlorinated VOCs for soils, shallow ground water and deep ground water.

See the Ground Water section below for specific requirements related to the treatment of the shallow ground water via air sparging.

6. Contaminated Material Within the Former Pond (AOC IV)

Located on the eastern part of Tract 1, the pond was formerly used to accept drainage and discharges from the facility prior to the early 1970s. Operation of the pond ceased and the pond was filled in between 1970 and 1973. The top 4 feet is considered historic fill and below that is a layer of contaminated material (including pond sediments). Arsynco estimates that the contaminated material layer is approximately 3.5 feet thick throughout the entire pond. The material contains elevated levels of VOCs, metals, TPHCs, phenols and PCBs.

Arsynco states that the pond liner was constructed with heavy bentonite clay of 4 feet thickness and the sample results demonstrate that the clay liner has effectively contained the contaminated materials and that the contaminated layer did not affect the ground water. Therefore, it is proposed that the contaminated layer would remain in place with institutional and engineering controls, which includes periodic ground water monitoring.

Extremely high levels of numerous contamination (for example, TPHC of 42,000 ppm, Copper of 24,000 ppm etc.) total VOCs, including chlorinated VOCs in soils over 1000 ppm (for example, TCE of 2,850 ppm), and PCBs levels ranging from 100 ppm to 970 ppm (sample VI-TP-3A) were found within this former pond area.

Due to the elevated levels of PCBs in the contaminated pond material, Arsynco has proposed to USEPA a Risk-Based Remedial Action that would call for the PCB material to remain in the pond with appropriate institutional and engineering controls. This proposal is currently under review by USEPA.

The remaining contaminants for the above list are co-mingled in the material that is contaminated by PCBs. Based on the sample data collected from the site, the clay liner appears to be intact and the soil and ground water outside of the liner has not been impacted by the contamination detected within the pond. Therefore, Arsynco proposes that all of the contaminated material remain in the pond. The pond would subsequently be capped and fenced in accordance with the USEPA requirements for the approval of the PCB remediation along with long-term ground water monitoring.

The proposal is conditionally acceptable. It is the NJDEP's understanding that the USEPA intends to conditionally approve Arsynco's Risk Based Remediation for PCB contamination greater than 50 ppm. Since the other contamination is co-mingled with the PCB contamination, and there is no impact to the soil or ground water beneath the pond by these contaminants, the NJDEP will allow for the contamination to remain in place with approved institutional and engineering controls as outlined in the USEPA approval. Arsynco shall be advised that should for any reason USEPA not approve the Risk Based remediation plan for the PCB contamination, they shall submit an active remedial action for the contaminated material within the pond. Arsynco shall analyze ground water samples for all contaminants within the pond as part of the long term monitoring that is proposed in the Risk-Based Remediation for PCBs,

7. Area of Process Related Contamination and PCBs > 500 ppm

Elevated levels of BNs, metals, VOCs, phenols and TPHC were identified within the limited area where process-type waste materials were identified in the southeast part of Tract 1. The extent of process-type waste in this entire area is depicted on Figure 26. This process-type waste material also contains PCBs >500 ppm. As a result, the

material is part of the PCB remedial proposal, which is currently being reviewed by USEPA. The soils of this area will be excavated and disposed off-site as part of the proposed PCB remedial program.

Following the removal of this material, post-excavation soil sampling will be conducted in accordance with N.J.A.C. 7:26E-6.4. Confirmatory samples will be analyzed for the targeted parameters of concern throughout this area, including VO+10, BN +15, priority pollutant metals, TPHC and phenols and PCBs.

The proposal is conditionally acceptable. Both vertical and horizontal delineation shall be clarified for all parameters of concern for this area. It is recommended that the maps be color coded to indicate the zone of regulatory compliance or non-compliance for each parameter. Please note that the excavation shall extend laterally and vertically beyond the highly contaminated zone to meet the applicable regulatory criterion pursuant to N.J.A.C. 7:26E- 4.1 (b) TRSR.

8. Proposed Remedial Action for Sediments on Tract 2- Hot spot removal

Arsynco proposes to actively remediate the area of sediments on Tract 2 that contain over 1000 ppm of total VOCs, specifically 4187 ppm, (Fig. 11A), at the area of sample VI-16. The area is delineated to the RDCSCC by sampling and contamination gradient. Excavation and off-site disposal is proposed for this hot spot area only. Following the excavation of this limited area, post-excavation samples will be collected in accordance with the TRSR for volatiles only. Once remediation is completed, Arsynco will restore/mitigate the disturbed area of wetlands in this area.

Arsynco states that disturbing the sediments within other areas of Tract 2 via excavation will not only be difficult (due to the swampy nature of this area) but will also create a considerable concern associated with dispersion of contaminants. In addition, the Tract 2 portion, considered a Saline Marsh, continues to receive increased drainage from Berry's Creek and the surrounding areas because it is one of lowest lying areas in the immediate vicinity.

The proposal for limited excavation within Tract 2 is conditionally acceptable. The removal of sediments associated with VI-16 (VOCs) will also remove the highest Tract 2 PCB level of (197 ppm).

Within approximately 50 feet of the proposed excavation limits, sample locations TR2-1, TR2-2, and TR2-3 contain the remaining highest Tract 2 PCB levels (29, 31, and 22 ppm, respectively) and the remaining highest site-related nickel and most of the remaining highest metal concentrations. TR2-3 contains high metals (Ni = 1700 ppm and Cu = 2100 ppm). TR2-4 also contains high metal concentrations including Ni (3800 ppm). TR-5 contains arsenic up to 99 ppm.

The proposed excavation shall be expanded to include the sample location TR2-1 through TR2-5. Please note that with removal of the sediments/soils around these additional locations the average PCB levels throughout the Tract should be reduced to 5.02 ppm. Given the relatively high levels of contamination in this highly industrialized area coupled with the tidal connection with Tract 2, further attempts to distinguish site from off-site contamination would be difficult. Only the maximum antimony concentration (43 ppm) will not be addressed by the expanded excavation. Based on the apparent vertical limitation of contaminants by the underlying peat layer, a 2 to 3 foot excavation depth for the entire excavation area should be sufficient.

In addition to the post-excavation sampling for VOCs, all samples shall also be analyzed for PCBs and metals.

The remediation of the limited area within Tract 2 appears to be motivated by the presence of significant concentrations of contaminants above the human health based criteria. NJDEP is also concerned with the contaminant concentrations and how they relate to ecological risk benchmarks. NJDEP is especially concerned with upper tropic level contaminants (hg, DDT and metabolites, PCBs) that are at, near, or above levels of concern for wildlife in the ambient environment. These persistent, bioaccumulation toxins (PBTs) are to be assessed more rigorously. Remediation of net site contributions is required in an effort to decrease ambient/background concentrations in soil and sediment. By removing the additional soils/sediments in the vicinity of samples TR2-1 through TR2-5 it is thought that a reduction in net contributions will be observed and no further remediation will be necessary to address ecological risk.

To fully assess whether the remediation of the sediments stated above satisfy all NJDEP concerns (human health and ecological), the remedial action report shall compare and present all post-excavation data as well as those concentrations remaining not only to the direct contact criteria but also to ecological risk benchmarks. The report shall also present

justification for the remediation and state how it is protective of ecological receptors.

Lastly, the southern ditch runs on and off-site along the southern property boundary. The ditch is apparently open/exposed to contaminated site fill. Since the remaining portion of the site is to be capped to preclude exposure to fill soils, the ditch cutting through the fill shall be remediated. A plan to culvert or line the ditch shall be proposed. This will prevent erosion and leaching from contaminated fill to the ditch and subsequent contaminant dispersal to Tract 2 and downgradient aquatic receptors.

C. Former Building Foundations

Following the cessation of operations in 1993, Arsynco began to dismantle the equipment and ultimately demolish the buildings, with the exception of the office building, #16 and the guard house. Once all material that could be salvaged and recycled was removed from the site, the buildings were demolished, leaving only the floor slabs. The slabs were sampled in the August 1994 for VO+10, PCB and PPM. The results were reported in the June 1997 Remedial Investigation Report. Elevated levels of PCBs were detected in the floor slabs of building 1, 2, 3/9, 6 and 8 at levels of 3.6 ppm and 18 ppm, 7.4 ppm, 2200 ppm, 14 ppm, and 3.3 ppm, respectively. Chromium was detected in the building 17/18 sample at 1350 ppm and low levels of xylene were detected in the building 6 and 8 samples, with the highest concentration detected at 240 ppm.

With the exception of the building 3/9 slab, all slabs were crushed and left in place. The slabs were crushed to allow access for soil sampling below the building. As noted above in section I.A.5, Arsynco proposes to properly dispose of the building 3/9 slab and the crushed building 6 slab. All other crushed slabs will remain on site and be included in the institutional/engineering controls. The proposal is acceptable.

D. QA/QC Review

Since the results generally indicate high levels of contamination across the site, the SI and RI data are generally accepted as usable, with the exception of the Dioxin data.

The NJDEP Office of Data Quality (ODQ) disagreed with the laboratory's reporting of "non-detect" results for total TCDD for one of the three soil samples. For B3-2(DI), the ODQ reports total TCDD result to be 10.4 ppt. Althouth the results were not ND, they are below the residential action level of 1 ppb. ODQ's determination (attached) was based on "sufficient qualitative criteria were met for compounds to be considered present". Arsynco provided documentation further clarifying the data on September 15, 2005. Final review of the dioxin data has determined that it is acceptable.

III GROUND WATER REQUIREMENTS

A. Response to NJDEP's letter dated February 4, 2003

The NJDEP has the following comments and requirements to the section of the report that responded to the NJDEP's letter dated February 4, 2003. Please note that only those items requiring a response are addressed.

1. Area II – Northwest portion of site

a. RCRA Storage Area:

Access was negotiated with NJ Transit and the proposed wells were installed. Wells MW27S/27D were installed northwest (NW) of on-site MW7S. An additional deep well, MW28D, was installed NW of on-site MW18D. The wells were installed between the railroad tracks and the Arsynco property line. Reportedly, there was insufficient space between the rails and the drainage ditch on the West Side of the tracks. Arsynco conducted a thorough investigation of site geologic and hydrogeologic conditions to further evaluate ground water flow, as well as a review of adjacent off-site properties.

Arsynco states that ground water flow is consistently toward the SE in the NE portion of the site, therefore, contamination in MW7S is coming onto the site.

The new wells, MW27S/27D and MW28D, are generally acceptable, however, they were installed on the same side of the western drainage ditch as the Arsynco site. This may or may not be sufficient to evaluate flow direction, but in any case, the wells are still in relatively close proximity to Arsynco AOCs to definitively prove an off-site source. In addition, the contour maps provided are from March 2002, May 2002 and May 2003, which are all high water periods. Shallow flow is actually toward the west and SW in this area of the site on the March 2002 map. A ground water divide is indicated in the vicinity of MW7S in May 2002, at which time there is a component of flow to the NW. It is possible that shallow flow is influenced by water levels in the western drainage ditch, flowing away from the ditch during high water and toward it at other times. Arsynco shall collect ground water and surface water level measurements quarterly and include shallow and deep contour maps for each quarter in semi-annual progress reports. All on and off-site monitor wells shall be included. If Arsynco wishes to prove that there is an off-site source for the ground water contamination in this area, Arsynco shall continue to pursue the installation of off-site wells farther to the west to evaluate ground water quality away from their AOCs. Even though Arsynco believes shallow water discharges to the ditch, if there is no other source of chlorinated VOs, given the variable flow direction, Arsynco would likely be the source. The depth of the ditch shall also be provided.

b. PP-12 Sample Location:

Benzene was detected in soil sample PP-12 at 24ppm and in well MW19S. Arsynco proposes to expand the VOC treatment system proposed in Section 7 to include the area of PP-12. This response is acceptable.

2. Area III – NE Portion of Site - Drum Cleaning Station:

Two off-site well clusters (MW29S/29D and MW30S/30D) were installed on the Northern Eagle Beverage Company property located north of Arsynco. The new wells were required to delineate contamination in the MW15 and MW8 well clusters respectively, as Henkel/Diamond Shamrock had previously made the case that contamination was migrating onto their site from Arsynco. The new wells were sampled in May 2003 and incorporated into an updated tidal study, which was conducted in June 2003. Arsynco constructed a fate and transport model for the contaminants detected in Henkel well MW17. The contaminants are mainly 1,2,4-Trichlorobenzene (1,2,4-TCB) and the three Dichlorobenzene (DCB) isomers. Arsynco asserts that the model indicates there is/was DNAPL in Henkel MW17 and that this is the source of chlorinated benzene compounds in Arsynco MW8D.

Seven soil samples were collected from the MW29D borehole during installation of that well. The samples were collected here because MW29D is located directly NW of MW8S/8D and between MW15S/15D and Henkel well MW17. It is also reportedly in the exact spot that Henkel claimed Arsynco stored drums. Henkel had previously suggested this area (apparently then Arsynco) was the source of very high concentrations of 1,2,4-TCB, and 1,2-, 1,3-, and 1,4-DCB in their MW17. Samples were collected below the meadow mat at depths ranging from 11.5 – 12 feet to 20.5 – 21 feet and analyzed for BN+15. Results were reportedly ND for the contaminants in question. Arsynco notes that the meadow mat was encountered at all off-site well locations at approximately the same depth it occurs on their site. (It was not clear from the Henkel logs whether the meadow mat was present in this area. As it is, the Henkel wells are apparently screened across it).

At this time, based on the information provided, it does appear that the chlorinated benzene contamination in Henkel MW17 is not emanating from Arsynco. However, as noted above, Arsynco shall continue to collect ground water level measurements quarterly to evaluate flow seasonally.

3. Area V – Building 19 and Northeast Tank Farm

Off-site soil delineation of soil sample DJS-009 was completed on the Northern Eagle Beverage property to the north of Arsynco. A well, MW31S, was installed at this location in December 2002. The well was sampled for VO+15 in May 2003 and contained only benzene at 10.1ppb. Arsynco will continue to monitor ground water in Area V as part of the proposed active VO treatment in shallow fill and ground water, as discussed in Section 7 of the report. This is acceptable.

4. Area VI - Former Pond Area

Four Shelby Tube samples were collected from the clay composing the pond liner in May 2002. The samples were collected from depths of 9.5 – 11.5 feet and 10.0 – 12.0 feet. The samples were analyzed for various factors, which would effect the permeability of the clay. The results reportedly indicate that the four-foot thick clay liner is an effective containment barrier. Arsynco states that the Shelby Tube data supports the conclusion that ground water has not been impacted by the pond.

NJDEP previously required an additional shallow well at soil sample VI-PD5. Arsynco states the installation of this well was overlooked during this phase of investigation, however, the well will be installed. Arsynco proposes to install the well further west, closer to samples VI-PD5(3) and VI-PD5(4), which contained higher VO concentrations. In addition, the proposed VO treatment system will be expanded into this area if necessary based on the results of the well point.

Based on the information provided, it appears that the clay composing the pond liner is sufficient for containment. Whether the clay is continuous and is uniformly thick is not definitively known. In addition, contamination may be migrating from the pond via overflow and/or surface runoff.

It is not clear whether a permanent well or a temporary well point are proposed at VI-PD5. However, as Arsynco proposes to move the sample location farther west, NJDEP recommends using a cone penetrometer methodology to determine the exact location of a permanent well. As the sampling equipment is billed by the day, rather than the number of samples, samples could be collected from VI-PD5, VI-PD5(3) and VI-PD5(4). The permanent well could then be installed at the most contaminated location. Alternatively, Arsynco shall install a permanent well between VI-PD5 and VI-PD5(3).

Expansion of the treatment system into this area is acceptable.

5. Area VII – Primary Tank Farm Area

The installation of the required shallow well paired with MW6D was overlooked during this phase of investigation. The well will be installed prior to implementation of the VO treatment system. This is acceptable.

6. Area VIII – Southern Portion of Site

Arsynco states that the NJDEP required wells at soil samples VIII-20 and grid G-30. However, as these samples are apparently very near each other, only one well is proposed. The soils in this area also contain PCB concentrations greater than 500ppm, which Arsynco proposed to excavate and dispose off-site. The May 11, 2000 letter also proposed to postpone installation of the one shallow well until the soil was removed. This was approved by NJDEP in their response letter dated May 1, 2001.

Off-site, downgradient wells MW32S/32D were installed approximately 120 feet SE of MW12S/12D. Elevated methylene chloride, benzene and nickel were detected in MW12S in May 2003, while only benzene at 1.1ppb was detected in MW32S. Arsynco states that MW32S is on the opposite side of a drainage ditch that runs along the south side of the site and that shallow ground water discharges to this ditch. Arsynco attributes the contamination in MW12S to the process fill within AOC VIII, particularly in the vicinity of MW13S. A large portion of the fill will be excavated and Arsynco believes the associated ground water contamination will decrease once the source is remediated.

In regard to deep ground water, only arsenic was detected in MW13D in May 2003. Arsenic is reportedly a regional problem. MW12D contained elevated PCE, TCE, and bis (2chloroethyl) ether in double to triple digit parts per billion concentrations. PCE and TCE were detected sporadically historically, but have been detected again in the 2002 and 2003 samples. Bis (2chlorethyl) ether has been detected consistently, however the levels have reportedly been decreasing. Arsynco believes all three compounds are migrating onto the site from the Cosan Chemical property located to the SW, particularly near MW6D.

The proposal to postpone installation of a shallow well in the vicinity of VIII-20/G-30 is acceptable. However, if Arsynco employs any temporary well methods on the site prior to that time, a sample shall be collected at this location to assess the condition of the ground water.

Comment on the remediation of MW12S and MW13S is provided below as general comment on the RAW. In regard to MW32S, Arsynco shall monitor this well pair in conjunction with the quarterly water level monitoring program referenced herein. Arsynco shall also collect surface water elevations from the ditches concurrent with collection of ground water level measurements. Elevations shall be collected from the ditches on the western and southern sides of the site. If appropriate (water is always present) water level measurments shall also be collected from the ditches on Tract II. This is to evaluate seasonal water level fluctuations and to determine whether contaminants are actually discharging to the ditches.

In regard to deep ground water, as stated above, Arsynco shall collect water levels quarterly to determine seasonal fluctuations in flow. Where appropriate, it is recommended that synoptic water levels from adjacent sites (Cosan Chemical) be included in at least one if not more quarterly monitoring events. This is suggested so that a "snapshot" of water levels in the area can be obtained for the same date and time. In addition, variation may occur in measurement collection technique, as well as interpretation of the data if different individuals are involved. Arsynco shall determine the well construction at other sites prior to collecting this data; as well construction may not be comparable.

7. Area IX – Ground Water

a. Wells MW14S and MW15S were sampled for PCBs in May 2003 using low flow purging methodologies. No PCBs were detected in either well. Arsynco states this supports their previous conclusion, which was that previous PCB concentrations were attributable to the presence of sediment in the samples. The NJDEP concurs with this conclusion at this time.

b. Arsynco states that the ground water underlying the site should be reclassified other than II-A. The argument for the shallow unit is that it is not extensive enough to be utilized as a water source. The argument for the deep zone is that the water quality is poor due to recharge from urban runoff.

Based on the procedures outlined in N.J.A.C.7:9C –1.10, it does not appear that Arsynco qualifies to apply for the reclassification of the ground water as a II-B. Reclassification to an III-B can only occur when chloride or TDS exceed the III-B standard (3,000ppm and 5,000ppm respectively) or natural ground water quality otherwise precludes potable use. This is not the case at Arsynco; therefore, the aquifer remains classified as an II-A.

c. Arsynco installed the well cluster required downgradient of MW12S/12D south of Tract II on property owned by East Coast Toyota.

This is acceptable. As the new wells have only been sampled once, these shall be sampled quarterly for one year to evaluate seasonal fluctuations in contaminant levels. All the new wells shall be sampled for VO+15 and BN+15. PCBs shall be included if appropriate based on area and/or previous detections.

d. A revised RAW is provided with this submittal. Arsynco states that although air sparging is still proposed, it is an expanding system, as opposed to a mobile system. Arsynco also states that no significant off-site migration has been identified. In fact, investigations by Arsynco indicate that VO contamination in Henkel well MW17 is from a source on the Henkel property and is migrating onto the Arsynco site.

Specific comments on the RAW are provided below. In regard to off-site migration, additional water level monitoring and synoptic water level measurements have been required above. Based on the information submitted by Arsynco, it does appear that the dichlorobenzenes and chlorobenzene historically detected in Henkel MW17 originate at Arsynco. It is recommended that Arsynco collect an updated sample for VO+15 and BN+15 from Henkel MW17.

e. Arsynco collected natural remediation parameters from a number of wells. Data is presented in Section 6.11. Specific comments are provided in the RAW.

f. An updated well search was performed and is presented in Appendix M of this submittal. Arsynco concludes that overall the well search identified no potable, downgradient receptors.

The well search is generally acceptable. However, contacting the water purveyor is not sufficient to ensure that all wells have been identified. Arsynco shall obtain billing lists for all properties located within ½ mile of the site and match that list to tax maps of the area. All establishments that do not receive a water bill shall be investigated to determine the water source for the property. Supporting documentation, i.e., the billing lists and maps, etc. shall be submitted to the NJDEP.

Barring the work required above, the NJDEP generally agrees with Arsynco's conclusion. From the information provided, it appears there are no domestic wells within ½ mile of Arsynco. Three non-community public supply wells, located at the Candlewyck Diner (#35), Rudox Engine & Equipment (#178) and Sun/Dic Acquisition Corp. (#193) were identified at less than one mile from the site. The Rudox well, which is 200 feet deep, is located at 0.35 mile; the depth of the casing was reportedly not available. The Candlewyck well is 0.5 mile from the site and is 225 feet deep with 51 feet of casing. Based on the flow direction as understood thus far, these wells are generally upgradient of Arsynco. Therefore, Arsynco is not required to sample the wells at this time. However, if ground water flow changes, or additional information indicates flow is other than currently understood, or if contamination is found to be more extensive, Arsynco may be required to sample these wells.

In regard to industrial wells, the well search identified a 170-foot deep well at Henkel and a 400-foot well at Lancaster Chemical. These facilities are located 0.1 and 0.2 miles from Arsynco. No casing length is provided for the Henkel well, however the Lancaster well is reportedly constructed with 311 feet of casing. Sampling of the Lancaster well is not required at this time, as the well is cased to a substantial depth. According to Henkel, their production well was previously abandoned.

g. Information on plume delineation, water level monitoring and flow direction is provided in section 6.11. Arsynco states that annual VO monitoring will continue at all wells until the ground water remedies are on-line.

Specific comments on section 6.11 are provided below. In regard to annual monitoring, additional water level measurements are required above.

8. Area X - Tract 2 Eastern Side of Site

Four surface water samples (DW1 – DW4) were collected from ditches on site in September 2002. Three were collected along the East Side of Tract 2 and one was collected at the southwest corner of the property where that ditch enters the site. The samples were unfiltered and analyzed for PP+40. The entire length of Berry's Creek, to which the ditches discharge, is classified as FW2-NT/SE2. Therefore, the data was compared to the Surface Water Quality Standards (SWQS) for both classifications. The only contaminants detected above both standards were arsenic, lead and mercury. Arsynco states that these metals were not used on the site and that arsenic is a regional problem. Arsynco does not propose any further action with respect to the ditches at the site.

Additional information regarding lead in samples DW1 and DW2 has been requested by the NJDEP in connection with the ecological evaluation. At this time, no additional work is required for the ditches on Tract 2 in regard to ground water.

9. Area XI – Ground Water

Ten off-site wells were installed during this phase of investigation, from December 2002 – April 2003. This included MW27S/D and MW28D to the west, MW29S/D, MW30S/D and MW31S to the north and MW32S/D to the south. All 47 on and off-site wells were sampled on May 19-20, 2003. Arsynco also conducted an extensive investigation of site and regional geology and hydrogeology, as well as an updated tidal study along the northern property boundary. Based on that information, Arsynco believes that contamination is migrating onto their site from the north, west and southwest.

MW11S continues to be the most contaminated shallow well on the site, with extremely elevated levels of VOs (BTEX). Wells MW14S and MW15S were sampled for PCBs using low-flow purging techniques. No PCBs were identified. Arsynco concludes that the low levels of PCBs previously identified were associated with sediment in the samples. PCBs were detected in MW29S at 657ppb (Arochlor 1248). This well was installed on the Northern Eagle Beverage property, between the MW15S/D cluster and Henkel MW17. Arsynco states that PCBs are elevated in ground water at Henkel (that's the reason for the existing slurry wall) and that the PCBs in MW29S are almost certainly attributable to that site. Arsynco further states that neither the slurry wall or capture zone at Henkel extend to this area.

Chlorinated VOs are the main contaminants of concern in the deep zone, particularly in MW11D and MW22D. Bis (2chloroethyl) ether was detected at 36.8ppb in MW6D. Arsynco states that this compound was never used on their site. However, the adjacent site to the south, Cosan Chemical, reportedly had up to 6,300,000ppb of this compound in HydroPunch ground water samples. Arsynco also states that the Cosan Chemical file indicates that deep ground water flow on their site is toward Arsynco wells MW6D and MW12D.

Flow from the west and north is addressed in comments B3 and C1 above.

In regard to bis (2chloroethyl) ether in MW6D coming from Cosan Chemical, this may be the case; however, additional work is required to support this argument. Seasonal ground water level monitoring has been required above to assist in determining the actual flow directions and frequency and duration of variations, etc. In addition, Arsynco shall determine the construction of the Cosan wells and collect synoptic water levels from both sites if appropriate. An area contour map showing all wells shall be generated from the data.

10. Receptor Evaluation

The nearest surface water bodies are the tidal ditches that border the site on the north, west, southwest and within Tract 2. Ultimately, these ditches discharge to Berry's Creek. Arsynco states that site ground water discharges to the ditches, but site related contaminants are not present above the SWQS. None-the-less, the surface water quality is poor, due to discharges from numerous sites. Deep ground water is impacted by the site, however, according to Arsynco, contamination in the deep zone does not migrate off-site. No subsurface utilities, basements, etc. would be impacted by this contamination.

An updated well search was included in this submittal. Seven domestic wells were identified within a one-mile radius of the site, however, none were within ½ mile and none were downgradient. Five public, non-community wells were identified within one mile, but none are downgradient. The nearest of these wells is 0.35 miles north of the site. Fifty-two wells classified as either industrial or irrigation were identified within one mile. Overall, Arsynco concludes that no potable, downgradient receptors were identified.

The NJDEP agrees that shallow ground water discharges, at least in part, to the ditches surrounding the site. However, Figure B-9 indicates that the drainage ditch between MW12S/D and MW32S/D is not keyed into the confining unit; the bottom of the ditch is within the shallow ground water zone. Therefore, it is possible for ground water to migrate beneath the ditch in the shallow zone. Note that the concentrations detected in MW32S are minimal and do support the argument that site ground water is discharging to the ditch, at least for the sampling events depicted. In regard to deep ground water, contamination does not appear to be migrating appreciably off-site to the south and east. However, due to the lack of off-site wells to the west, the presence of possible incorrectly constructed wells at Henkel and variable flow of site, it is not certain that contamination is confined to the site to the north and west. Additional work has been required above to make these determinations.

B. Remedial Action Workplan

1. Ground Water Remediation System

Shallow fill/soil and shallow ground water will be addressed via an air sparging system designed to stimulate microbial respiration. A bacterial plate count analysis indicated that a sufficient population of microorganisms capable of degrading BTEX is present. It was also determined that nutrients required for microbial metabolism are present.

Previously, horizontal sparge wells were proposed, as the vadose zone is thin and the meadow mat can be difficult to distinguish. Arsynco is now proposing vertical sparge wells, the depth of which will be pre-determined via cone penetrometer borings in each area. The radius of influence for an individual sparge well was determined to be seven feet when injecting up to 2 cfm at a pressure of 2-4 psi. Arsynco also proposed to revise the previous proposal for a "mobile" air sparging system. The currently proposed system will be permanent, but will be installed in an "expanding" fashion. The main area to be treated consists of the VO plume depicted on Figure 28, which includes VOs above 1000ppm in shallow soils. The total area to be treated is approximately 53,000sq. ft.; the depth (to meadow mat) is approximately 4.5 feet. In addition to the main plume, there are two small VO contamination areas near building 1. These are the areas of former soil sample PP-12 and MW19S and the former drum cleaning station near the NE end of building 1. The combined area of these locations is approximately 1,900sq.ft. the depth is approximately 4.5 feet. There are two other small areas of VO contamination located at soil samples VI-PD5, VI-PD5 (3), VI-PD5 (4) and PP-3. Shallow monitoring wells are proposed in each of these areas. Based on the results from the monitoring wells, these areas may also be included in the remediation. The VO contamination within the AOC VI pond sediments will be addressed separately and are not included in the air-sparging plan. Likewise, the VO impacted soil within the process waste fill area is being treated in conjunction with PCBs >500ppm and will not be included here.

The plan proposes to address the VO plume by separating it into four sections as illustrated on Figure 28 of the submittal. Approximately 60 air sparge points will be installed at 15-foot intervals beginning in Area 1. Each sparge well will be constructed with 3/8 inch PVC with eight inches of 20-slot screen set immediately above the meadow mat. A horizontal vapor recovery system consisting of two one hundred-foot sections of 4-inch diameter, 20 slot PVC screen will be installed approximately 50 feet apart. Once the first section of the system is installed, it will be activated and monitored for effectiveness and cost efficiency. Based on this evaluation, modifications to the system, if warranted, can be applied to the remaining sections to be remediated.

2. System Monitoring

Six one-inch diameter, 24-inch long stainless steel well screens will be installed from one to three feet below grade throughout each treatment cell. The annular space will be filled with gravel and the top will be sealed with bentonite-cement slurry. The bottom will be capped. Tubing will connect each monitoring point to the SVE manifold area and allow sampling of "gross" ground water quality at the water table interface. Each point will be purged and sampled for DO CO2, temperature, pH, specific conductivity and redox potential.

A baseline round of VO+10, DO, CO2, temperature, pH, specific conductivity and redox will be performed immediately prior to system startup in each section. MW11S will be sampled for these parameters in Area 2, the first section to be treated. Arsynco proposes to start up the initial system (Area 2) in a cyclical (on/off) mode for the first 14 days. The system will then be cycled off for 14 days. During the initial 14-day startup, samples will be collected from the six well screens and MW11S every 12 hours. MW11S will be monitored for BTEX, while the well screens are sampled for the parameters specified above. During days three to five, the screens and MW11S will be sampled for the same parameters once a day. This will be repeated on days seven, ten and fourteen. A similar program will be conducted during the 14-day shutdown period, after which the system will be re-started. It is anticipated that the system will continue to be operated cyclically, with data gathered during the initial period used to determine optimal operating and monitoring conditions. Following evaluation of startup in Area 2, installation of the air sparging system will commence in the second treatment zone. Similar startup/shut-down programs with monitoring will be conducted. These procedures will continue during successive installations throughout the four treatment zones.

Arsynco states that air sparging/soil vapor extraction (AS/SVE) is anticipated to be only the first phase of the remediation. Once the majority of the contaminant mass is removed and a decreasing trend is established for ground water contaminant concentrations, Arsynco expects to utilize monitored natural attenuation as the remedy. Arsynco reiterates that the aquifer should not be considered a Class II-A and that therefore, those ground water quality standards (GWQS) should not apply.

The air sparge and vapor extraction system is an acceptable strategy for ground water. Arsynco shall submit a plan for operating and monitoring specifics within Area 2 within 120 days of system startup. In regard to using natural

remediation following the active phase of the cleanup, this is conceptually acceptable. Arsynco may propose this once all source material has been removed, ground water contaminant concentrations have been significantly reduced and a decreasing trend can be demonstrated for each contaminant at all source wells. Note that a decreasing trend shall be established by applying the Mann-Whitney U Test to eight quarters of post-remedial sampling data.

3. Pond Sediments

The contaminated sediment layer at the base of the pond (between the clay liner and the overlying fill) will remain in place and be capped with asphalt. In addition, the two in-flow locations and the out-flow will be sealed within the pond boundaries using a cement/bentonite slurry. This is to prevent over-flow into these unlined areas. The chain link fence and deed notice proposed for Tract 1 fill also applies to this area.

See the comments above regarding the capping of the sediments. However, a well was previously required at soil sample VI-PD5, which is at the centrally located in-flow to the pond. Arsynco has agreed to install this well, as the soils contained elevated chlorinated VOs. Arsynco shall be certain that any remedy for the sediment layer is permanent and prevents both impact to ground water and over-flow to soil and/or surface water.

As stated above, the pond liner appears to be containing contamination, at least in regard to ground water.

4. Deep Ground Water

Arsynco states that the two major areas of deep ground water contamination are at MW11D and MW22D and concedes that the contamination in these wells is attributable to the site. MW8D contains chlorobenzene and chloroform, which are reportedly present in site soils located slightly to the west. Arsynco believes these compounds may be breakdown products emanating from the dichlorobenzene contamination in off-site Henkel well MW17. MW12D, located along the southern property boundary, contains PCE, TCE and 1,2-DCE sporadically. The levels of these compounds have also reportedly increased in the last two sampling rounds. Arsynco states that this contamination may also be migrating onto the site from the south and SW.

Arsynco cites several lines of evidence indicating that natural remediation is occurring and that site conditions are favorable for continuing biodegradation. Based on this evidence, Arsynco proposes to conduct four to six additional quarters of monitoring to evaluate natural attenuation rates of the chlorinated VOs in deep ground water. Aquifer testing will also be performed, after which all the data will be utilized to construct a fate and transport model for the VO contamination.

The May 2003 VO concentrations in MW11D (27,245ppb) and MW22D (48,360ppb) are too high to naturally remediate, therefore, the proposed monitoring is not necessary for evaluation of this remedy. Although the NJDEP cannot guarantee that natural remediation will be appropriate for concentrations less than 1ppm, in general, active remediation is required for levels greater than 1ppm. Therefore, Arsynco shall submit a revised RAW for active remediation of deep ground water, which generally addresses concentrations greater than 1ppm. As stated above, the ground water cannot be classified as other than II-A at this time.

The proposed aquifer test may still be useful for the development of an active remedy and is conceptually acceptable. The fate and transport modeling is not required at this time, as natural remediation is not acceptable.

In regard to other contaminated deep wells, additional water level monitoring is required above to determine whether contamination is migrating onto the site. The NJDEP is inclined to agree that contamination may be coming onto the site from Henkel, particularly as MW17 on that site is/has been heavily contaminated. However, the NJDEP cannot agree to the presence of off-site contamination coming from the west and/or south/southwest, without off-site data that demonstrates this. Existing wells located on those properties may be utilized if/when appropriate, i.e., if wells are screened across two units, the water levels may not be comparable, but the ground water quality data may be useful to demonstrate background concentrations. If existing wells are not available, off-site well pairs shall be installed. If background contamination cannot be demonstrated, Arsynco shall address the contamination in MW8D, MW12D, etc.

5. Classification Exemption Area (CEA)

Arsynco shall propose a CEA in accordance with the Technical Requirements for Site Remediation, N.J.A.C. 7:26E-8.

IV PERMIT REQUIREMENTS

1. Arsynco shall comply with all federal, state, and local laws, regulations, and ordinances in implementing the approved Interim Remedial Measure.

2. Arsynco shall submit applications for all required federal, state, and local permits to the appropriate regulatory authority within 30 days of the receipt of this Interim Remedial Measure. Should any condition or limitation of the permits be more stringent than those in the approved Interim Remedial Measure, then the permit requirements shall supersede the terms of this approval. Arsynco shall submit a copy of each application to the BNCM.

3. AIR PERMITS:

New Jersey Air Permits may be required for the discharge of vapors from the treatment unit to the atmosphere. Contact:

Bureau Chief
Bureau of New Source Review
PO Box 027
401 East State Street, Floor 2
Trenton, N.J. 08625-0027
(609) 292-9258

4. SOIL EROSION:

Soil Erosion and Sediment Control Certifications are required for any extensive soil sampling or cleanup projects that disturb more than 5,000 square feet of surface area of land including demolition of structures, construction of parking areas and clearing or grading of land for other than agricultural purposes. As appropriate, Arsynco shall contact the County Soil Conservation District for guidance in the development and approval of a Soil Erosion and Sediment Control Plan for the site.

5. WETLANDS PERMITS

Arsynco shall contact the NJDEP's Land Use Regulation Element at (609) 984-3444 to determine if the remedial activities at the above referenced site require a Wetlands Permit and/or a Transition Area Waiver or other applicable land use permits.

V REMEDIATION SCHEDULE

1. Due to the time that has lapsed, the remedial action schedule submitted with the Remedial Action Workplan is no longer accurate. Therefore Arsynco shall submit a revised remedial action schedule, within 30 calendar days of the receipt of this letter, in accordance with N.J.A.C. 7:26E. identifying the projected month and year for each task.

2. If modifications to any remedial action schedule are anticipated during implementation of the referenced Interim Remedial Measure, Arsynco shall submit a revised remedial action schedule. Based on a review of this schedule, the NJDEP will approve or disapprove the revised remedial action schedule. If the revised remedial action schedule is disapproved, the NJDEP will note the reasons for the disapproval.

3. If any current or anticipated delay is caused by events beyond the control of Arsynco, then Arsynco shall notify the NJDEP in writing within 10 calendar days of such event. Arsynco shall precisely describe the cause of the delay and request a schedule revision. Increases in the costs or expenses incurred in fulfilling the requirements outlined in this letter shall not be considered a basis for an extension and such extension requests will not be granted.

4. Arsynco shall notify the assigned Case Manager in writing at least 14 calendar days prior to the initiation of all investigation/remedial activities at the site.

VI ELECTRONIC DATA DELIVERABLE REQUIREMENTS

Pursuant to the Technical Requirements for Site Remediation (TRSR), N.J.A.C. 7:26E-3.13(c)3v, Arsynco shall submit all analytical data both as a hard copy and an electronic deliverable using the database format outlined in detail in the current HAZSITE application or appropriate spreadsheet format specified in the NJDEP's electronic data interchange manual. Please note that the electronic deliverables may be submitted directly to the Case Manager via email (linda.taylor @ dep.state.nj.us).

The Electronic Data Submittal Application (EDSA) is a software program which will perform an administrative and completeness check on electronic data prior to that data being reviewed, evaluated or used by NJDEP personnel. Arsynco shall ensure that it performs this check on all electronic data submitted to the NJDEP in the .txt, .wk1, or .dbf format to determine if the basic required information is included and correct. This routine is intended to decrease the occurrence of the NJDEP rejecting data for administrative errors or omissions.

For further information related to electronic data submissions, please refer to the Site Remediation Program's (SRP's) home page at the following Internet address: **http://www.state.nj.us/dep/srp/hazsite/** This website includes downloadable files, an explanation of how to use these files to comply with the NJDEP's requirements, the SRP's Electronic Data Interchange (EDI) manual, and Guidance for the Submission and Use of Data In GIS Compatible Formats Pursuant to "Technical Requirements for Site Remediation".

VII GENERAL REQUIREMENTS

1. Arsynco shall comply with all federal, state, and local laws, regulations, and ordinances.

2. Arsynco shall obtain all federal, state, and local permits prior to implementation of the approved PRAW and RIW. Should any condition or limitation in the permits be more stringent than those in the approved PRAW and RIW, then the permit requirements shall supersede the terms of this approval.

3. Arsynco shall collect and analyze all samples in accordance with the protocol outlined in the most current edition of the "NJDEP Field Sampling Procedures Manual" and the Technical Requirements for Site Remediation (TRSR), N.J.A.C. 7:26E.

4. Upon the written request by NJDEP, Arsynco shall submit for NJDEP review and approval any additional workplans deemed necessary by NJDEP during the implementation of a PRAW and RIW to fully delineate the nature and extent of environmental contamination associated with Arsynco. Arsynco shall implement and complete any such additional workplans, and submit the results, in accordance with the time frames set forth in the approved additional workplan. Arsynco shall revise and submit the required information within a reasonable time not to exceed 30 calendar days from receipt of written notification from NJDEP.

5. Arsynco shall submit the results or additional workplans, in triplicate in accordance with the approved schedule. Please note that only one copy of the Quality Assurance/Quality Control Deliverables is needed.

6. Arsynco shall submit a final and any interim remedial action report in accordance with N.J.A.C. 7:26E-6.6.

7. The Industrial Site Recovery Act (ISRA) requirement for remediation of all environmental contamination associated with Arsynco and the terms and conditions of the approved Partial Remedial Action Workplan shall be binding upon Arsynco, and its officers, management officials, successors in interest, assigns, tenants, and any trustee in bankruptcy or receiver appointed pursuant to a proceeding in law or equity.

If you have any question concerning this document, please contact the Case Manager, Linda L. Taylor, at (609) 633-1432.

Sincerely,

Stephen E. Maybury, Bureau Chief
Bureau of Northern Case Management

c: Leonard Schwartz, Aceto Corp.
Jim Haklar, USEPA
Chris Lacy, BEERA
Elizabeth Opitz, BGWPA
Bergen County Soil Conservation District
Mid-Bergen County Health Department

Copy

JMC Environmental Consultants, Inc.

571 W. Lake Avenue
Suite 6
Bay Head, New Jersey 08742
(732) 295-2144
Fax (732) 295-2150

June 16, 2004

Mr. Alan Straus
U.S. Environmental Protection Agency
Region II
290 Broadway
New York, New York 10007-1866

Re: ***Arsynco, Inc.***
Foot of 13th Street
Carlstadt, Bergen County, NJ

Dear Mr. Straus:

This document is provided in response to your email of January 30, 2004 which presented four (4) comments/questions regarding environmental indicators (EIs) related to the property referenced above. As you recall, Arsynco's response to the first two (2) items noted in your email, both of which related to human exposure EIs, was submitted to your office on April 26, 2004. This document provides a response to the final two (2) items listed in your January 30, 2004 email (items #3 and #4), both of which relate to the migration of contaminated groundwater EI. To facilitate your review of this document, USEPA's comments are presented in *italics* below, followed by Arsynco's response.

3. *Based upon available information, there appears to be a northeastern component of flow in the vicinity of MW-15. Thus, there appears to be a potential that impacted groundwater at the Arsynco property may be migrating towards the Cognis Corporation (formerly Henkel Chemical) property. Thus, additional information is needed to assess contamination beyond the northern property boundary, specifically in the vicinity of the Cognis property. Please provide all historic and current information relating to groundwater conditions at the Cognis facility. Of particular interest are reports and data relating to groundwater flow direction and groundwater quality, and the design and effectiveness of the site groundwater remediation systems that are in operation at the southern boundary of the facility.*

Response:

A northeast component of groundwater flow appeared to be observed within a very localized area along the northern property boundary during the May 19, 2003 water level readings due to the high water levels recorded at shallow/deep well cluster MW-15S/MW-15D. As shown on Figures 20 and 21 of the December 2003 report, the high water levels recorded at wells MW-15S/15D resulted in a variable flow regime in this localized area, with a component of flow in the shallow zone shown to be toward the northeast and a component of flow in the deep zone shown to be primarily to the east (lateral to off-site well MW-29D) with a lesser component of flow to the east-northeast.

It should be noted that well cluster MW-15S/15D is located along the extreme northern boundary of the Arsynco property, and these wells are considered to be upgradient site wells that are indicative of the quality of both shallow and deep groundwater entering this area of the site from the northwest. It must also be noted that the flow regime along the northern property boundary is impacted by tidal fluctuations, as determined during the 72-hour tidal study and continuous water level monitoring program conducted in June 2003 and discussed in Section 4.5 of the December 2003 report.

Shallow Groundwater Flow in Area of MW-15S Along Northern Property Boundary

The June 2003 tidal study conducted along the northern site boundary demonstrated that a northeast component of flow in the shallow zone does not always exist in this area. In fact, the tidal study data confirmed that the shallow groundwater flow pattern in the area along the northern property boundary was predominantly to the south and southeast (from the Northern Eagle Beverage and Cognis sites toward the Arsynco property). This south to southeast flow regime in the shallow zone is consistent with both historic flow observed on the Arsynco site and regional flow patterns. Figures C-52 through C-56, which were included within Appendix C of the December 2004 report, provided water table contour maps depicting the shallow flow regime along the northern site boundary at five (5) different times during the June 2003 tidal study program. The predominant south to southeast flow pattern does not result in any significant off-site flow to the northeast in the shallow zone along the northern property boundary and, thus, does not present any significant exposure concern with respect to the potential migration of potentially impacted groundwater (although shallow groundwater at MW-15S has been shown to be largely in compliance with NJDEP's Groundwater Quality Standards). The predominant south to southeast flow pattern in this area also demonstrates that MW-15S can largely be considered an upgradient site well.

As illustrated on Figure 20 of the December 2003 report, the water levels obtained on May 19, 2003 depict shallow zone flow to be partially to the northeast only in the immediate area of well MW-15S. The northeast component of flow depicted in the shallow zone in this localized area on May 19, 2003 resulted in some flow being directed from MW-15S toward off-site well MW-29S, located on the adjacent property owned and operated by Northern Eagle Beverage (NEB). However, as Figure 20 depicted, shallow zone flow to the east and northeast of MW-29S was directed to the southeast and back toward the Arsynco property. As noted above, this southeast flow is consistent with both historic and regional flow regimes as well as continuous water level data collected during the June 2003 tidal study. Additionally, based on the data discussed above, shallow groundwater flow from MW-15S would not be expected to migrate toward the Cognis/Henkel property (located to the north, just beyond the NEB site).

Shallow Groundwater Contaminants in Area of MW-15S Along Northern Property Boundary

As noted on Table 5 of the December 2003 report submittal, volatile organic compounds (VOCs) are the primary contaminants associated with shallow well MW-15S, and the levels of VOCs that have been identified in this well since its installation in 1996 are extremely minor. In fact, five (5)

sampling events have been conducted at MW-15S since 1998, and either no VOCs or no elevated concentrations of VOCs were detected during three (3) of the five (5) sampling rounds (1998, 2001 and 2002). Additionally, during the remaining two (2) sampling events (1999 and 2003) benzene was the only VOC detected at an elevated level in this well and was identified at only trace concentrations of 2.0 ppb and 1.8 ppb at those times, only slightly above the NJDEP's Groundwater Quality Standard (GWQS) of 1 ppb. All existing data demonstrate that shallow well MW-15S contains virtually no contaminants and is essentially clean. Therefore, no significant impact to shallow groundwater downgradient of MW-15S would occur, and potential exposure to this groundwater would not represent a significant concern.

Table 5 of the December 2003 report also summarized the sample data obtained from off-site well MW-29S which, based on the localized northeast component of flow observed on May 19, 2003, would have been downgradient of MW-15S at that point in time. Benzene was the only VOC contaminant detected at an elevated level in MW-29S during the May 2003 sampling event and was detected at a level of only 3 ppb. However, fairly significant levels of various metals, which are not associated with on-site well MW-15S (or any of the other on-site shallow wells near the northern site boundary), were also detected in off-site well MW-29S. This data strongly suggests that the contaminants present in off-site shallow well MW-29S are associated with an off-site source of contaminants and are not related to contaminant sources on the Arsynco property.

As discussed below, groundwater sampling data from the nearby Cognis site demonstrates that the contaminants in the Cognis well located along their southern property boundary in the area of the NEB and Arsynco sites (Cognis well MW-17), are vastly different and orders of magnitude higher than the contaminants identified in Arsynco site well MW-15S.

Deep Groundwater Flow in Area of MW-15D Along Northern Property Boundary

The June 2003 tidal study along the northern site boundary demonstrated that flow in the deep zone in this area was generally consistent with the water level data from May 19, 2003 (Figure 21 of December 2003 report)), depicting a component of flow from MW-15D to the east and slightly east-northeast. Figures C-66 through C-70, which were included within Appendix C of the December 2003 report, provided piezometric surface maps for the deep zone along the northern site boundary at five (5) different times during the tidal study program. The data show that the east and east-northeast component of flow is very localized and confined only to the area of deep well MW-15D. The localized flow conditions created by the high water level at MW-15D appear to direct flow from the limited area of this well to the east and east-northeast, onto the adjacent property owned by NEB. However, as depicted on Figure 21 and Figures C-66 through C-70 (Appendix C of report), flow in the deep zone is consistently shown to resume the regional southeast pattern immediately to the east of MW-15D. As a result, flow from the MW-15D area would not be expected to have any impact on the Cognis site.

Based on the overall flow regime observed, although some degree of deep zone flow from MW-15D is likely directed onto the NEB property immediately east and east-northeast of MW-15D, this flow is ultimately directed back to the southeast and toward the Arsynco property.

Deep Groundwater Contaminants in Area of MW-15D Along Northern Property Boundary

As noted on Table 5 of the December 2003 report submittal, VOCs are the only contaminants associated with deep well MW-15D. Specifically, the only VOCs identified at elevated concentration in MW-15D since installation of the well in 1996 have been trichloroethene (TCE), 1,1-Dichloroethene (1,1,-DCE) and cis-1,2-Dichloroethene (cis-1,2-DCE).

Table 5 of the December 2003 report also summarized the sample data obtained from off-site well MW-29D which, based on the east to slightly east-northeast component of flow observed in the area, would generally be considered to be sidegradient of MW-15D. A low level of TCE, as well as elevated levels of vinyl chloride (VC), chlorobenzene (CB) and benzene were detected in off-site well MW-29D during the May 2003 sampling event.

It is significant to note that the contaminants associated with nearby Cognis well MW-17 are entirely different than the contaminants identified in Arsynco site well MW-15D. Data from the Cognis site is discussed below.

However, it should also be noted that Cognis well P-1, located more than 120 feet to the northwest of MW-15D, contains the same types of chlorinated VOCs identified in Arsynco well MW-15D (see June 1996 and October 1996 Cognis correspondence and reports provided in Attachment A). Cognis well P-1 is believed to be located hydraulically upgradient from Arsynco site well MW-15D and off-site well MW-29D.

Please note that the deep groundwater zone is located below the confining meadow mat and clay layer at the site, and this groundwater at the site and in the region is not used. As a result, no significant concerns would be expected with regard to construction worker exposure to a deeper, confined aquifer.

Groundwater Flow and Contaminant Conditions on the Cognis Property

As discussed above, Arsynco does not possess copies of all groundwater analytical and groundwater remediation system design and operation data for the nearby Cognis site. However, copies of groundwater data reports associated with the Cognis facility that were available to Arsynco are provided herein as Attachment A, as requested by USEPA.

As discussed in significant detail in Arsynco's December 2003 report submittal, a review of the available Cognis file data indicates that Henkel wells P-1 and MW-17 are screened across both shallow and deep groundwater zones (i.e., through the confining layer). As a result, the water levels obtained from these wells cannot be correlated to wells on the Arsynco site, where separate shallow and deep (double cased) wells were properly installed. Further, the fact that the Cognis site wells appear to be screened across a confining layer brings into question all of the groundwater flow data generated by Cognis.

The majority of the historic groundwater flow data from the Cognis site (Attachment A) describes a predominant and overall flow to the south and southeast in the "shallow" water described by Cognis (encompassing their wells P-1 and MW-17). This south and southeast "predominant" and "overall" flow regime reported by Cognis corresponds to the overall flow regime documented by Arsynco in both the shallow and deep zone on the Arsynco site. However, some of the Cognis file documents reviewed described a *variable* flow regime in "shallow" groundwater in the southern part of the Cognis property, with this "variable" flow reported to be in a general northerly or northwesterly direction from their well MW-17. However, a careful review of the Cognis data indicates that this "variable" flow direction to the north or northwest is wholly misleading. Not only was this flow regime determined with water levels obtained from wells screened across a confining layer, but the flow regime was plotted by Cognis using essentially two (2) well points (MW-17 and either P-1 or SMW-1) across the entire southern part of their site (area encompassing approximately 3 to 5 acres). More importantly, the groundwater levels reported and utilized/plotted by Cognis in relation to MW-17 at these times when they reported flow to the north or northwest, were actually collected from Cognis well P-1, not MW-17 (see reports dated June 14, 1996 and October 22, 1996 in Attachment A). Although this error was reported to NJDEP by Cognis/Henkel in a correspondence dated October 22, 1996, the erroneous groundwater flow maps and the flow directions reported were apparently never corrected. This data demonstrates that actual flow conditions on the southern part of the Cognis site were not accurately determined or reported by Cognis.

Overall, neither the Arsynco nor the Cognis groundwater flow data indicate that the Cognis wells located along the southern portion of their site (Cognis wells MW-17 and P-1) are downgradient from the Arsynco site and MW-15S/15D well cluster. Rather, based on the data reported, it is likely that Cognis well P-1 is located upgradient from the Arsynco site and that Cognis well MW-17 is either sidegradient or upgradient from the Arsynco site. As noted previously, Cognis "shallow" well P-1 contains the same types of chlorinated VOCs identified in Arsynco deep well MW-15D (see June 1996 and October 1996 Cognis correspondence and reports provided in Attachment A), although very limited sample data is available for well P-1.

A significant amount of sample data is available for Cognis well MW-17 (reported by Cognis to be a "shallow" well), located to the northeast of Arsynco well cluster MW-15S/15D. The Cognis data provided in Attachment A demonstrates that the contaminants present in Cognis well MW-17 are vastly different and orders of magnitude higher than the contaminants present at the MW-15S/15D cluster. VOCs are the predominant contaminants present in Cognis well MW-17 and are present at significant levels. The following table provides a summary of the VOC analytical results from Cognis well MW-17 for the time period where records were available to Arsynco (1989 through 2000); the following table summarizes the data contained in the Cognis documents included in Attachment A.

Summary of Analytical Data from Cognis Well MW-17

SAMPLE DATE:	Oct. 1989	July 1990	Nov. 1996	Feb. 1997	Aug. 1997	Feb. 1998	Aug. 1998	Feb. 1999	Aug. 1999	Apr. 2000
COMPOUND	*All results reported in ug/L (ppb)*									
Benzene	61	32	120	130	130	<130	120	78	<82	NS
Toluene	1,400	750	430	2,300	1,800	230	1,900	660	840	NS
Ethylbenzene	700	580	670	1,600	760	260	870	360	330	NS
Xylenes	3,300	1,700	1,800	7,300	3,100	<1000	3,600	1,800	1,300	NS
Chlorobenzene	390	330	2,000	1,800	1,500	2,400	1,200	1,100	950	NS
1,2,4-Trichlorobenzene	34,600	6,700	2,000	90,000	11,000	1,400	2,100,000	3,000	3,400	NS
1,2-Dichlorobenzene	92,300	26,000	12,000	92,000	26,000	6,700	2,400,000	12,000	18,000	NS
1,3-Dichlorobenzene	123,000	2,600	1,800	<1900	2,900	750	280,000	1,200	1,600	NS
1,4-Dichlorobenzene	80,000	3,700	2,600	<1900	3,900	940	360,000	1,600	2,200	NS

As noted on Table 5 of the December 2003 report submittal, the data for Arsynco site well MW-15S is vastly different from the Cognis well data. While significant levels of BTEX have consistently been present in Cognis well MW-17, no significant levels of these contaminants have been detected in Arsynco well MW-15S. In fact, benzene has been the only VOC identified at an elevated concentration in shallow well MW-15S since 1998 and has been detected on only two (2) occasions since that time (trace levels of 2 ppb and 1.8 ppb). Additionally, all of the Cognis data demonstrate that the multi-chlorinated benzene isomers have consistently been detected at concentrations indicative of DNAPL in Cognis well MW-17, while none of these compounds have ever been detected in Arsynco well MW-15S.

Table 5 of the December 2003 Arsynco report submittal also demonstrates that the data for Arsynco well MW-15D is vastly different from the Cognis well data. Again, while significant levels of BTEX and the multi-chlorinated benzene isomers have consistently been present in Cognis well MW-17, no concentrations of these contaminants have ever been detected in Arsynco well MW-15D (with the single exception of 2.9 ppb of toluene detected in well 15D in July 1999). Chlorobenzene is the only VOC contaminant present in Cognis well MW-17 that has been detected in Arsynco well MW-15D; however, the levels of chlorobenzene identified in MW-15D range from "Not Detected" to 32 ppb and have never approached the levels of chlorobenzene identified in Cognis well MW-17.

In addition, as noted above, the only contaminants that have been detected at elevated levels in deep well MW-15D since installation of the well in 1996 have been TCE, 1,1,-DCE and cis-1,2-DCE. These compounds have not been detected in Cognis well MW-17. This data further demonstrates that there is no hydraulic connection between the wells and that contaminated groundwater is not migrating from the Arsynco site onto the Cognis property.

4. *If the review of groundwater data at the Cognis facility indicates that groundwater from the Arsynco property is migrating towards and beneath the Cognis facility, written verification would also be needed from Cognis Corporation to confirm that no intrusive activities are planned in the area of shallow groundwater impact (similar to the written verification requested for Northern Eagle Beverage above). This information is needed to ensure that off-site receptors (e.g., construction workers) will not come in contact with impacted shallow groundwater associated with the Arsynco facility while conducting construction activities at the Cognis facility.*

   Response:

   Groundwater beneath the Arsynco site is not migrating beneath the Cognis property to the north. Please refer to the response provided for item 3, above.

Should you have any questions with regard to this matter please feel free to contact me at your convenience.

Very truly yours,

James M. Clabby
President

enclosure

cc: James P. Dillon

Northern Eagle Beverage Company

March 22, 2004

James Clabby, President
JMC Environmental Consultants, Inc.
1126 Concord Drive
Brick, NJ 07824

Dear Jim:

Per our conversation last week regarding the two monitoring wells installed and maintained by Arsynco on our property, identified as wells #DJS009 and #ARSD-33, this letter will confirm that at the present time Northern Eagle Beverage company has no intention, albeit an emergency, to disturb the blacktop in the area of said wells.

We will give you advance notice, if practicable, before we disturb the area immediately surrounding these wells.

Please feel free to contact me if you should have any questions.

Sincerely,

Christopher Quinn
Director of Operations & Admin. Systems

cc: John Goldsmith

Post-it® Fax Note 7671	Date 4/21/04	# of pages ▶ 1 (Cover)
To A STAUSE	From J. DILLON	
Co./Dept. EPA	Co. ARS-HKO INC	
Phone #	Phone #	
Fax #	Fax #	

800 Sixteenth Street, Carlstadt, New Jersey 07072 Tel: (201) 531-7100 Fax: (201) 531-7145

Copy

JMC Environmental Consultants, Inc.

571 W. Lake Avenue
Suite 6
Bay Head, New Jersey 08742
(732) 295-2144
Fax (732) 295-2150

April 26, 2004

Mr. Alan Straus
U.S. Environmental Protection Agency
Region II
290 Broadway
New York, New York 10007-1866

Re: ***Arsynco, Inc.***
Foot of 13th Street
Carlstadt, Bergen County, NJ

Dear Mr. Straus:

This document is provided in response to your email of January 30, 2004 which presented four (4) comments/questions regarding environmental indicators (EIs) related to the property referenced above. As requested, the following provides Arsynco's response to the first two (2) items noted in your email, both of which relate to human exposure EIs. To facilitate your review of this document, USEPA's comments are presented in *italics* below, followed by Arsynco's response.

1. *According to available information, the entire Arsynco property is currently surrounded by a perimeter fence. To ensure that human exposures to contaminated surface soil and sediment within Arsynco property boundaries are controlled, detailed information on the fencing locations and condition is required. Written verification is requested from Arsynco including a detailed description of the fence and how it prevents off-site receptor access and exposure to contaminants at the Arsynco property.*

Response:

The Arsynco property is currently surrounded by perimeter fencing as shown on the attached site plan. Permanent, 6-foot chain link fencing is present along the entire western property boundary bordering the adjacent railroad tracks. Permanent, 6-foot chain link fencing is also present along the southern property boundary, from the railroad tracks east, all the way to Sixteenth Street. The fencing located along the extreme southern property line is located on both Arsynco's property and on the adjacent property owned by Cosan Chemical; a large, regional, tidal drainage ditch (which always contains water) is also located along this stretch of southern property line. Both the fencing and the drainage ditch serve to prevent unauthorized access to the property in this area.

Permanent, 4-foot chain link fencing is present along the entire eastern property boundary which borders Sixteenth Street. It should be noted that New Jersey Meadowlands Commission (NJMC), formerly the Hackensack Meadowlands Development Commission (HMDC), zoning ordinances prohibited placement of 6-foot chain link fencing along the Sixteenth Street property line.

The northern boundary of the Arsynco site is entirely enclosed by a combination of both permanent, 6-foot chain link fence and temporary safety fencing. The permanent chain link fencing along the northern property line is present along the eastern part of the site, extending to Sixteenth Street. The temporary safety fencing along the northern property boundary is present from the northwest corner of the property, extending east and eventually joining the permanent chain link fencing. It should be noted that Arsynco has recently retained a fencing contractor to install permanent chain link fencing along the entire northern property boundary where the temporary fencing is now located. As a result, the temporary fencing will soon be replaced with permanent chain link fence.

The property perimeter fencing is currently in good condition and adequately prevents unauthorized access onto the property. Off-site receptor access will be further enhanced when the temporary fencing along the portion of the northern property boundary is replaced with permanent 6-foot chain link fencing. All gates in the fencing are continually maintained with chains and padlocks, and signs prohibiting trespassing are located at each gate.

2. *Ethylbenzene and xylenes were detected above New Jersey Non-Residential Direct Contact Soil Cleanup Criteria (NJ NRDCSCC) in two off-site sample locations, ARSD-33 and DJS-009. In addition, benzene and arsenic were detected above New Jersey Groundwater Quality Criteria (NJ GWQC) in shallow groundwater at MW-31S. These soil and groundwater samples were taken on the Northern Eagle Beverage property, just to the north of the Arsynco property. Our understanding is that this area is currently covered with pavement. However, additional information is needed to confirm that no intrusive activities are planned in this area that will result in off-site receptor exposure to impacted soil and shallow groundwater. Written verification is requested from Northern Eagle Beverage, stating that no construction activities are planned in this area until soil concentrations above NJ NRDCSCC have been removed.*

Response:

As noted by USEPA, elevated levels of ethylbenzene and xylenes were detected in historic, off-site soil samples ARSD-33 (collected in 1991) and DJS-009 (collected by NJDEP personnel in 1990). However, as described in the report submittals made by Arsynco, the contaminants historically detected at these off-site locations were documented to be very isolated, as no elevated concentrations of these compounds were identified in surrounding off-site soil samples V-9, V-10, V-27A or V-27B.

In addition, benzene and arsenic were the only contaminants detected above NJDEP's Groundwater Quality Standards (GWQS) in shallow groundwater at well MW-31S, located off-site in the immediate area of historic soil samples ARSD-33 and DJS-009. It should be noted that elevated levels of arsenic in shallow groundwater are not associated with the Arsynco site. Rather, the level of arsenic detected in MW-31S is indicative of regional groundwater quality conditions and is not the responsibility of Arsynco.

Historic soil samples ARSD-33 and DJS-009, as well as shallow monitoring well MW-31S, are located on adjacent property that is owned and operated by Northern Eagle Beverage Company (NEB). As noted by USEPA, the area of these off-site soil samples and shallow well is entirely covered with asphalt pavement. The pavement in this area is fairly new and is in excellent condition, with no evidence of cracking, sinking or deterioration. The presence of the asphalt pavement in this area sufficiently prevents human exposure to the contaminants.

As requested by USEPA, Arsynco contacted NEB to confirm that no ground invasive activities were planned for the area in question. A letter from NEB, confirming that they have no current plans to disturb the pavement in this area, is attached for your records. It should also be noted that the area of the noted soil samples and shallow well MW-31S is located in a remote corner of the NEB parking lot, away from all site buildings and immediately adjacent to the Arsynco property line. As a result, no common ground disturbance activities by NEB (i.e., utility lines, building additions, etc.) would be expected in this area. Rather, the only future, potential ground disturbance in this area would likely be associated with asphalt repair or repaving, and these activities do not commonly result in the disturbance of soils at depth or groundwater. It should also be noted that the NEB property is covered by a Deed Notice and Declaration of Environmental Restrictions (DER) that was established at the time the property was developed in the mid 1990s. These devices represent institutional controls designed to prohibit or restrict, as appropriate, disturbance of the contaminated soils that remain at the NEB site. The specific details of the NEB Deed Notice and DER are currently not known by Arsynco, although Arsynco has requested copies of these documents from NEB for review.

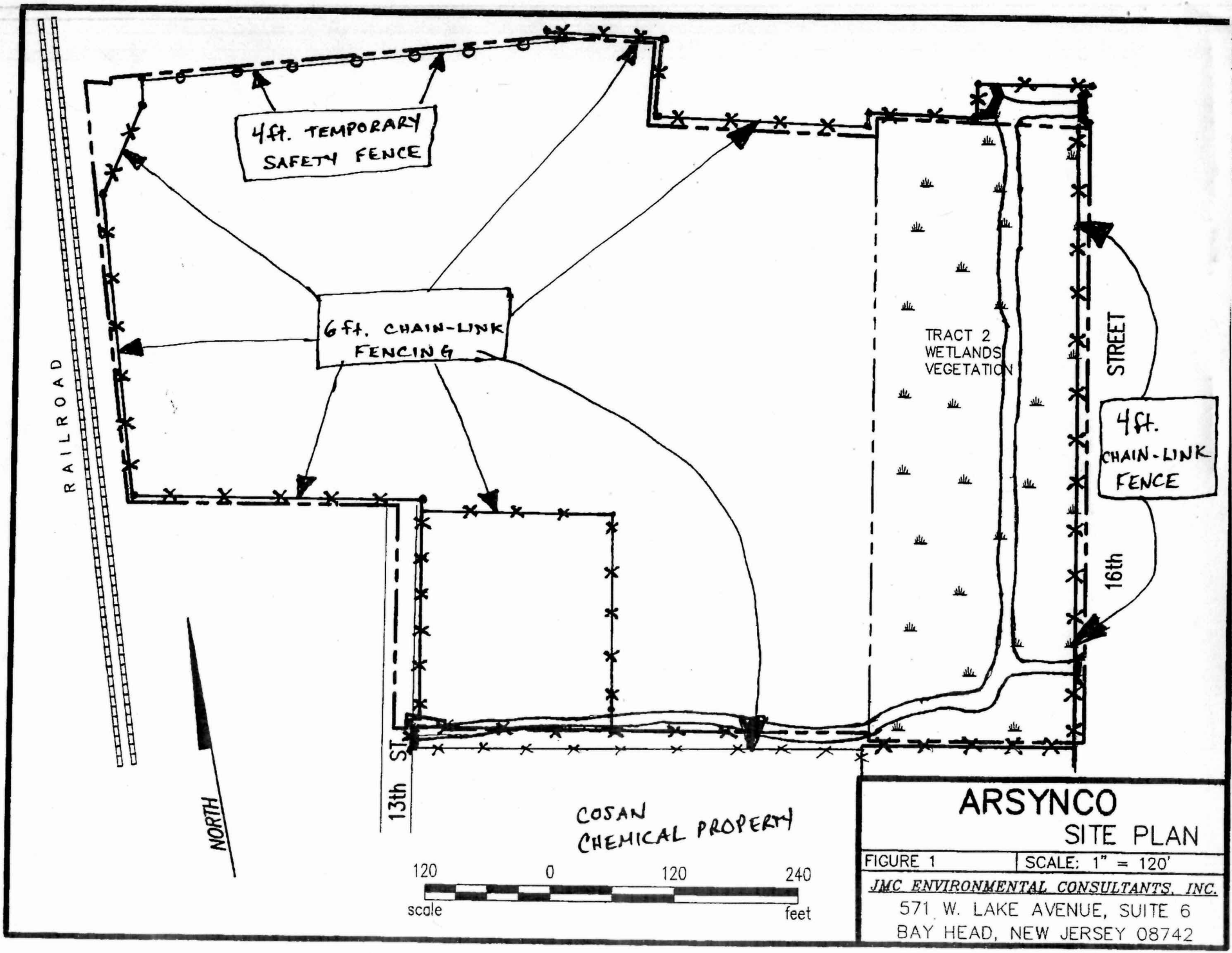
As we discussed, Arsynco's responses to the third and forth comments provided in your January 30, 2004 email will be provided under separate cover. Should you have any questions with regard to this matter please feel free to contact me at your convenience.

Very truly yours,

James M. Clabby
President

enclosure

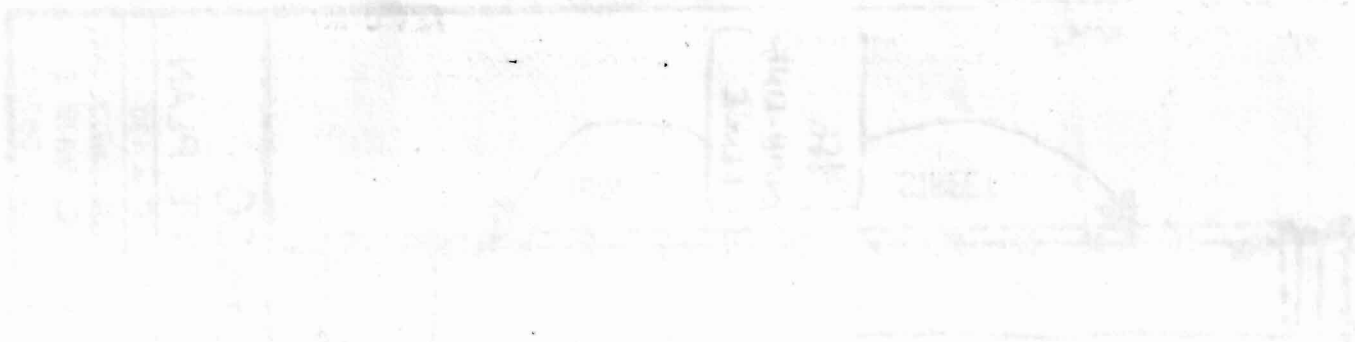
cc: James P. Dillon



ARSYNCO
SITE PLAN

FIGURE 1	SCALE: 1" = 120'

JMC ENVIRONMENTAL CONSULTANTS, INC.
571 W. LAKE AVENUE, SUITE 6
BAY HEAD, NEW JERSEY 08742



Northern Eagle Beverage Company

March 22, 2004

James Clabby, President
JMC Environmental Consultants, Inc.
1126 Concord Drive
Brick, NJ 07824

Dear Jim:

Per our conversation last week regarding the two monitoring wells installed and maintained by Arsynco on our property, identified as wells #DJS009 and #ARSD-33, this letter will confirm that at the present time Northern Eagle Beverage company has no intention, albeit an emergency, to disturb the blacktop in the area of said wells.

We will give you advance notice, if practicable, before we disturb the area immediately surrounding these wells.

Please feel free to contact me if you should have any questions.

Sincerely,

Christopher Quinn
Director of Operations & Admin. Systems

cc: John Goldsmith